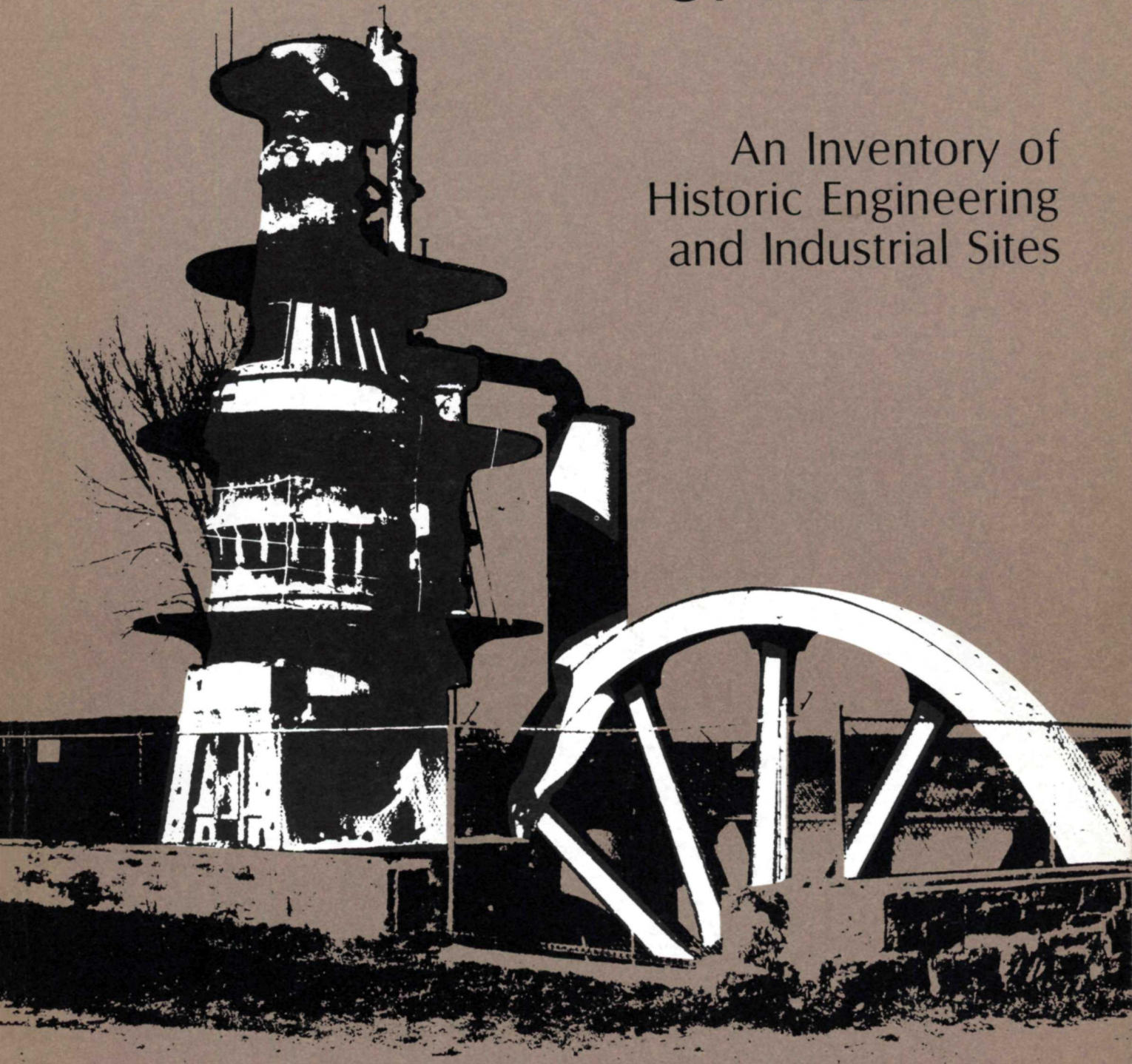
THE UPPER PENINSULA OF MICHIGAN

An Inventory of Historic Engineering and Industrial Sites



Historic American Engineering Record

THE UPPER PENINSULA OF MICHIGAN

An Inventory of Historic Engineering and Industrial Sites

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Origins of the Upper Peninsula Inventory

The Historic American Engineering Record (HAER) is a division of the Office of Archeology and Historic Preservation, National Park Service, and is responsible for documenting and thus preserving America's engineering and industrial heritage. As part of its program, HAER prepares inventories or lists of significant engineering and industrial sites in all parts of the country. The Inventory of the Lower Peninsula of Michigan was completed in 1975-1976 and presented in The Lower Peninsula of Michigan: An Inventory of Historic Engineering and Industrial Sites (Washington: NPS 172, 1976). A separate intensive inventory was conducted in the Upper Peninsula during the summer of 1977, reflecting the region's unique engineering, mining, and industrial history. While there was no previous comprehensive survey of historic engineering and industrial sites in the Upper Peninsula, several earlier broad architectural surveys greatly aided my efforts. These included separate surveys of the western and eastern sections of the Upper Peninsula, conducted in 1975 and 1976 under the direction of Kathryn Eckert of the Michigan History Division and Professor Sadayoshi Omoto of Michigan State University, as well as a survey conducted in 1975-1976 by David Stewart for the Western Upper Peninsula Planning and Development Region. Finally, there was an Historic American Buildings Survey (HABS) inventory of architectural sites in the Copper Country, conducted by Kevin Harrington and Wendy Nichols in 1975.

Format of the Inventory

The Inventory includes 318 sites, with the overwhelming majority constructed before 1925. Each inventory card includes a brief history of the site, a physical description, the precise location of the site, a sketch-map, several photographs, and a list of historical source materials. The completed cards are deposited with HAER in Washington and with the Michigan History Division in Lansing. Space limitations have made it necessary to delete some of the less important sites from this volume and to abridge the descriptions of about one-quarter of the sites. For three common structures, lighthouses, railroad buildings, and bridges, the less important examples are simply listed.

The sites are arranged according to the HAER Industrial Classification System and then listed alphabetically by the name of the site.

Categories which include a large number of sites, such as "Bridges and Trestles", are further subdivided. In the left-hand corner of each entry, the reader will find the site name, the date of the structure now standing, its street address or location, and the city or town. The right-hand corner contains the name of the United States Geological Survey map on which the site is located and beneath it the Universal Transverse Mercator (UTM) grid reference. This fifteen-digit reference is a precise locating mechanism consisting of three elements: the zone number, the east-west measurement, and the north-south measurement. Below the UTM reference is the county in which the site is located. At the end of each entry are the important sources of information for the site and an indication if the site is listed on the National Register of Historic Places (NR). Indices were also prepared listing county, city or town, and site names to further assist the reader.

Acknowledgements

The Upper Peninsula Inventory was a cooperative venture supported by several institutions. The encouragement and advice of Dr. T. Allan Comp, HAER Senior Historian, were indispensable. The Inventory was largely financed through a generous grant from the Michigan History Division of the Michigan Department of State. The cooperation and encouragement of the History Division, particularly from Dr. Martha Bigelow and Kathryn Eckert, are gratefully acknowledged. The College of Engineering, Michigan State University, paid the salary of a student assistant who worked on the project.

The publication of this volume was supported in part by generous donations from the Historical Society of Michigan, the Alger County Historical Society, the Douglass Houghton Chapter of the Michigan Society of Professional Engineers, and the Upper Peninsula Branch of the American Institute of Mining Engineers.

Northern Michigan University played a pivotal role in this endeavor, serving as my institutional home for twelve weeks and handling the financial administration of the project. I am particularly indebted to Dr. Roy Heath, Dean of Graduate Studies and Director of Research and Development at N.M.U. The gracious cooperation of Miss Helvi Walkonen of Northern's Library, Professor Barry Knight, Chairman

of the Department of History, and James Carter of the University News Bureau is also acknowledged.

Scores of Upper Peninsula residents supplied information on sites or assisted my work in other ways, but they are far too numerous to acknowledge individually here. However, there are several individuals whose contributions were outstanding. They include O.R. Boll, Wisconsin Michigan Power Company; Burton Boyum, Cleveland-Cliffs Iron Company; Esther Bystrom, Marquette County Historical Society; Professor David Halkola, Michigan Technological University; Louis Koepel, Quincy Mining Company; Stewart Moran, Edison Sault Electric Company; H.L. Munch, Lake Superior District Power Company; and Reno Norell, Cliffs Electric Service Company.

This volume is really the work of a team of individuals who shared the tasks of field work, research, writing, editing, and typing. Two diligent student assistants, Glenn Grossman and Wallace Szumny, completed many of the inventory cards and did research on a large number of sites. Sandra Jacobs typed the inventory cards, while Diane B. Abbott typed and edited this volume. E. Stephen Tokarchuk prepared the maps of the Upper Peninsula.

The success of this work is largely the result of the assistance I have received from these institutions and individuals. Its omissions and shortcomings are my own responsibility.

Charles K. Hyde

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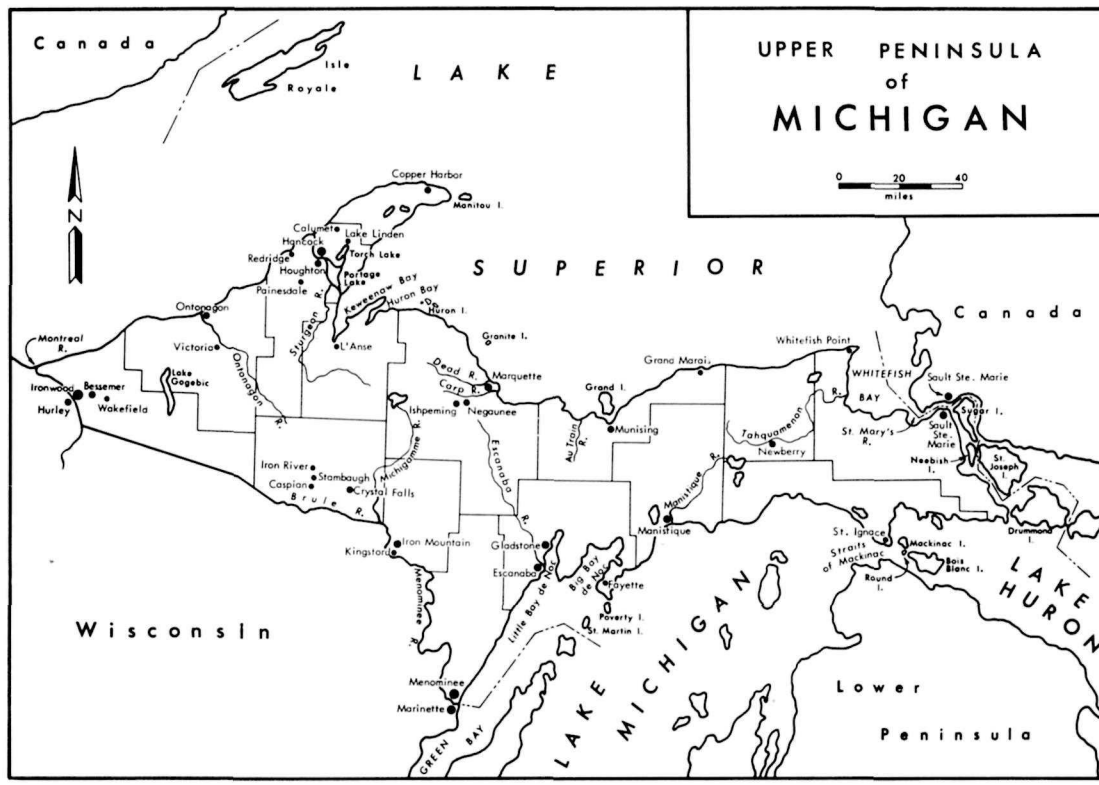
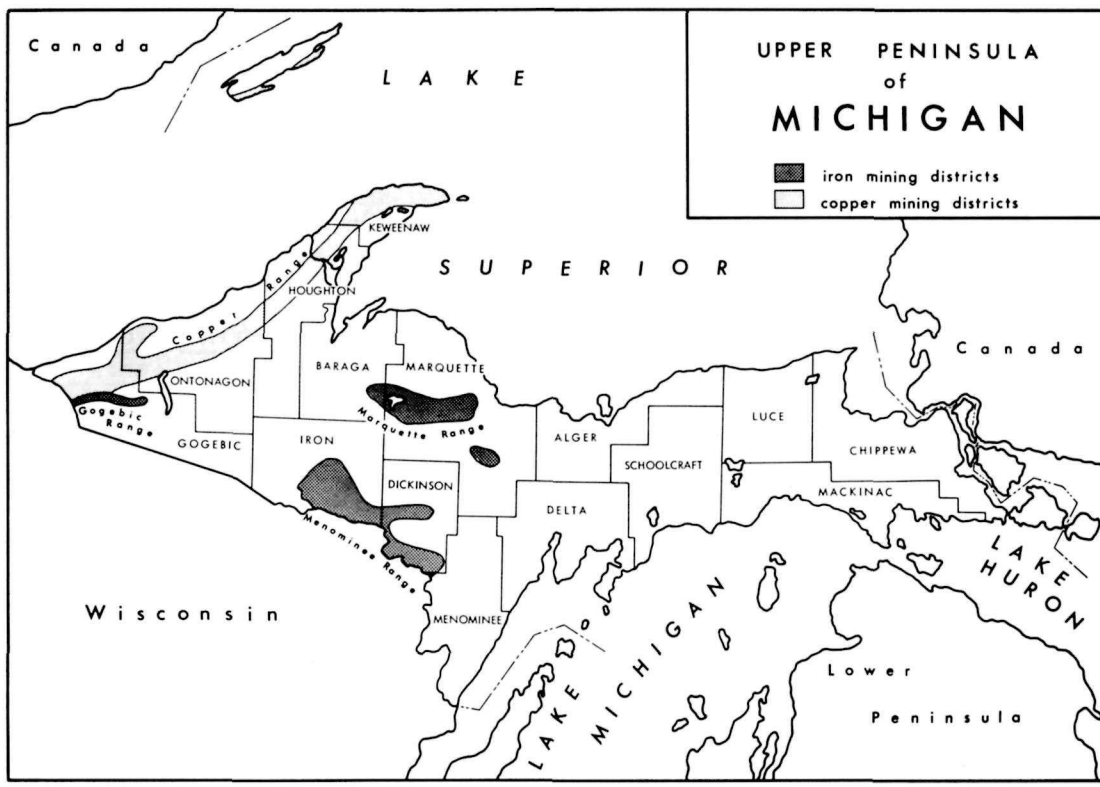

UPPER PENINSULA
of
MICHIGAN
0 20 40
miles
Canada
LAKE
Isle Royale
SUPERIOR
N
Copper Harbor
Manitou I.
Calumet
Lake Linden
Hancock
Torch Lake
Redridge
Houghton
Portage Lake
Painesdale
Keweenaw Bay
Huron Bay
Huron I.
Ontonagon
Sturgeon R.
L'Anse
Granite I.
Montreal R.
Victoria
Ontonagon R.
Dead R.
Marquette
Grand Marais
Whitefish Point
Ironwood
Bessemer
Hurley
Wakefield
Lake Gogebic
Carp R.
Ishpeming
Negaunee
Grand I.
Au Train R.
Munising
WHITEFISH BAY
Sault Ste. Marie
Sugar I.
Tahquamenon R.
Newberry
St. Mary's R.
Sault Ste. Marie
Neebish I.
St. Joseph I.
Iron River
Stambaugh
Caspian
Crystal Falls
Michigamme R.
Escanaba R.
Brule R.
Menominee R.
Manistique
Manistique R.
Iron Mountain
Kingsford
Gladstone
Escanaba
Big Bay de Noc
Fayette
Poverty I.
St. Martin I.
Little Bay de Noc
St. Ignace
Straits of Mackinac
Mackinac I.
Bois Blanc I.
Round I.
Drummond I.
LAKE HURON
Wisconsin
Menominee
Marinette
GREEN BAY
LAKE MICHIGAN
Lower Peninsula


UPPER PENINSULA
of
MICHIGAN
iron mining districts
copper mining districts
Canada
LAKE
SUPERIOR
KEWEENAW
HOUGHTON
Copper Range
BARAGA
MARQUETTE
ONTONAGON
Gogebic Range
GOGEBIC
IRON
Marquette Range
ALGER
LUCE
CHIPPEWA
SCHOOLCRAFT
DICKINSON
DELTA
MACKINAC
Menominee Range
MENOMINEE
LAKE HURON
Wisconsin
LAKE MICHIGAN
Lower Peninsula

INTRODUCTION TO EXTRACTIVE INDUSTRIES

As a condition for admission into the Union, the residents of the Michigan Territory agreed in 1837 to a compromise settlement of their border dispute with Ohio, in which Michigan gave up its claim to a narrow strip of land which included Toledo and in return was ceded the area which comprises the Upper Peninsula. Michigan residents were nearly unanimous in condemning this forced "compromise", and the state legislature characterized the Upper Peninsula as a "sterile region on the shores of Lake Superior, destined by soil and climate to remain forever a wilderness." It was in fact a largely undeveloped area at the time, with fewer than 7,000 residents, compared with roughly 80,000 inhabitants of the Lower Peninsula. Michigan undoubtedly had the best of the bargain, however, because this wilderness region contained massive deposits of copper and iron, first discovered and exploited in the 1840's. This section of the Inventory includes sixty-six sites, divided about equally between copper and iron mines.

The development of the mineral resources of the Upper Peninsula accounts for most of the region's economic development in the nineteenth century, so that more than half the sites in this volume are directly or indirectly linked to mining. Sites related to the processing of minerals, including copper stamping and smelting plants, iron blast furnaces, and charcoal kilns, are included in the Bulk Products Industries section of the volume. Similarly, the transportation network of the region, including railroads and marine transport, was essentially developed to serve the mining industries. A significant number of early hydroelectric plants, included in the Utilities section of this volume, were developed by mining companies. While the mines are listed in this section, dozens of additional sites relating to the extractive industries appear throughout the volume.

Native Americans had used the natural copper deposits on Isle Royale centuries before the coming of the Europeans, and French and British explorers had discovered several deposits in the eighteenth century, but there was no significant exploitation until the early 1840's. Dr. Douglass Houghton was appointed Michigan's first state geologist in 1837 and immediately conducted a survey of the mineral resources of the Upper Peninsula. His 1841 report to the state legislature, revealing the existence of extensive copper deposits in the Keweenaw Peninsula, touched off the great copper rush of 1843-1846, which saw hundreds of prospectors coming into the district. The earliest mines opened in this area and in Ontonagon County, including the Victoria Mine (1844), Cliff Mine (1845), and Minnesota Mine (1847), exploited deposits of mass copper, i.e. solid pieces of pure native copper.

The discoveries which proved to be far more significant, however, were the amygdaloid deposits, in which small specks of copper are found in almond-shaped cavities (amygdaloids) in the rock, and the conglomerate deposits, in which the rock is held together by layers of copper which interlace the rock in the same way that layers of fat run through a well-marbled steak. The large amygdaloid deposits of the Portage Lake area were first exploited in the early 1850's by the Quincy Mining Company, along with several other producers, while the great Calumet conglomerate deposits were first opened during the Civil War.

Michigan's copper mines dominated the national market during the second half of the nineteenth century. On the eve of the Civil War, there were thirty-three companies, largely backed by Eastern capital, producing over twelve million pounds of copper and employing about 3,700 workers. Output reached fifty million pounds by the early 1880's, when Michigan accounted for three-quarters of the nation's copper production. The district's production continued to grow rapidly, doubling during the 1880's and reaching a peak of 267 million pounds in 1916, but its share of national production declined beginning in the 1880's as new deposits were exploited in the Far West. Michigan produced about one-third of national copper output over the period 1885-1904, but only seventeen percent of the total in 1905-1918 and less than one-tenth thereafter. Production declined in absolute terms as well, averaging about 160 million pounds during the 1920's, but falling to under fifty million pounds in the early 1930's. There was a short-lived wartime revival of the industry, followed by a series of permanent closings of the mines as deposits were exhausted and no longer economically valuable. A handful of mines lingered on until the mid-1960's, but the only active mine in the region today is the White Pine Mine, opened in the early 1950's.

Copper production became increasingly concentrated in the hands of a few leading firms after the Civil War. The mass mines of Keweenaw and Ontonagon Counties, the first to be developed in the district, were quickly played out, and by 1880, the Portage Lake amygdaloid mines, along with those on the Calumet conglomerate lode, both within Houghton County, accounted for eighty-nine percent of Michigan's production. During this period, the industry was dominated by the Calumet and Hecla Mining Company, which accounted for sixty percent of output in 1870-1900 and forty-eight percent of total production over the longer period 1845-1946. The industry became more concentrated in the 1890's as a result of a series of consolidations. Calumet and Hecla purchased

hundreds of acres of mineral lands around Calumet, while the Quincy Mining Company acquired the adjacent Pewabic, Mesnard, and Pontiac Mines. Two large-scale producers emerged during this period of consolidation--the group of mines controlled by Albert S. Bigelow, including the Osceola, Tamarack, Kearsarge, Tamarack Junior, and Iroquois, and the Paine-Stanton group (Copper Range Consolidated Company), including seven older mines, plus the Baltic, Champion, and Trimountain, developed after the discovery of the Baltic Lode in 1897. By 1904, four major producers accounted for ninety-six percent of Michigan's copper output: the Calumet and Hecla (thirty-nine percent), the Copper Range Company (thirty percent), the Bigelow group of companies (eighteen percent), and the Quincy Mining Company (nine percent). This section of the Inventory is dominated by structures relating to the Calumet and Hecla Mining Company (fifteen sites), as well as the Quincy Mining Company (eleven sites).

The second major mineral resource of the Upper Peninsula was iron ore, first discovered by William Burt in 1844 in the vicinity of the City of Negaunee in Marquette County. The deposits of the Marquette Range were developed slowly before 1855, when the St. Mary's Falls Ship Canal (see later entry) was opened. Shipments were less than 1,500 tons in 1855, but then leaped to over 114,000 tons in 1860, and reached 236,000 tons by 1865. The output from the Marquette Range continued to expand rapidly throughout the nineteenth century, and with the opening of the Menominee Range in 1877 and the Gogebic Range in 1884, Michigan quickly became the premier iron ore producer of the Great Lakes. It was the leading iron ore producing state until 1900, when it was surpassed by Minnesota, and it nevertheless accounted for approximately one-quarter of American ore output during the period 1900-1940 and roughly fifteen percent of the total since then. Nearly one billion tons of ore were extracted from Upper Peninsula iron mines between 1849 and 1973, divided about equally between the three major iron ranges.

The iron mining industry has experienced an uneven decline in the twentieth century. The Menominee and Gogebic Ranges achieved their peak output levels during World War I and then went through a long and painful period of decline as the major deposits were exhausted. The last mine on the Gogebic Range closed in 1967, while there are only two active mines in operation on the Menominee Range. The Marquette Range has had a more fortunate history in recent decades. The output of the district fluctuated around four million tons per annum during the 1920's, declined sharply in the early Depression years, but recovered sharply

in the late 1930's, with a peak output of 5.6 million tons in 1937. There were several violent fluctuations in production during the 1940's and 1950's, but the Marquette Range typically produced between 4.5 and 6.0 million tons annually during that period. The district's massive low-grade ore deposits were first exploited in the late 1950's with the development of concentration and pelletizing plants, and record production levels of over ten million tons were achieved in the late 1960's. Today, the Marquette Range still accounts for about one-tenth of American iron ore production.

The surviving buildings and structures at both the copper and iron mines are remarkably similar. With the exception of the two open-pit iron mines in Gogebic County, all of the mines in Michigan were of the deep-shaft variety. A total of seven headframes (shafthouses) have survived, but a much larger number of other buildings are extant. The typical deep-shaft copper or iron mine had the following surface equipment: the headframe, which supported the cables lifting the skips or cages carrying ore, men, and supplies; a hoisthouse, initially equipped with a steam-powered hoist, but often electrified in later years; a boilerhouse to supply steam to the hoist; a machine shop and/or blacksmith shop; a dryhouse, where the miners changed and left their work clothes to dry out; and warehouse facilities. The largest mines, such as the Calumet and Hecla and the Quincy Mine, had much larger surface complexes with several additional special-purpose buildings.

AHMEEK MINE
SHAFT NUMBER TWO (1905-1907)
First St.
Ahmeek

Ahmeek
16.395160.5238100
Keweenaw

The Ahmeek Mining Company was established in 1880, and Captain John Daniell of the Tamarack Mine sunk the first shafts. It ran intermittently until 1903, when the Kearsarge Lode was located, but then became a substantial producer. The Calumet and Hecla Mining Company gained control of the Ahmeek Company in 1909, and then merged with it in 1923. The buildings remaining include a large brick machine shop, with a gabled roof, measuring 58 feet by 144 feet; an adjacent steel-framed warehouse, 36 feet by 160 feet; a rectangular brick dryhouse, 70 feet by 130 feet, with a gambrel roof; and a rectangular frame building, 30 feet by 110 feet, probably a warehouse.
[Benedict, Red Metal, pp. 131, 137, 156; Sawyer, p. 494; Stevens, V, p. 166; Stevens, VIII (1905), p. 275; Stevens, XI (1912-1913), p. 18; "Report of the Directors of the Ahmeek Mining Company to the Stockholders for the Year Ending December 31, 1908," (Boston, 1909), p. 11]

AHMEEK MINE
SHAFTS NUMBERS THREE AND FOUR
On US-41, M-26
Ahmeek

Ahmeek
16.396000.5239360
Keweenaw

The Ahmeek Mining Company was established in 1880, but ran intermittently until the main Kearsarge Lode was discovered in 1903. The surface structures at Shafts Numbers Three and Four were built shortly before the Calumet and Hecla Mining Company gained a controlling interest in the Ahmeek in 1909. One unusual feature of this mine is the fact that the two shafts, both sunk at roughly an 80 degree angle, but in different directions, came up into a single headframe and rockhouse. The buildings remaining at this site include a rectangular brick dryhouse, 39 feet by 139 feet, with a gabled roof; a rectangular brick hoisthouse, also with a gabled roof, measuring 65 feet by 146 feet; and a steel-framed boilerhouse, measuring 57 feet by 84 feet.
[Benedict, Red Metal, pp. 131, 137, 155; Sawyer, p. 494; Stevens, X (1910-1911), p. 278; Stevens, XI (1912-1913), p. 18]

Allouez Mine Shaft Number Four Headframe (c.1945), New Allouez

ALLOUEZ MINE
SHAFT NUMBER FOUR (c.1945)
End of B St.
New Allouez

Ahmeek
16.394240.5238625
Keweenaw

The Allouez Mining Company began operations in 1869, but was absorbed by the Calumet and Hecla Mining Company in 1923. This shaft was sunk during World War II, and all structures including the headframe were constructed of wood because of the wartime shortages of steel. The headframe, protected by a tarpaper exterior, is 30 feet square at the base and approximately 50 feet tall. The stanchions for the steel hoisting cables, as well as the cables, are extant. Surface buildings include the hoisthouse, 40 feet by 50 feet, with a gabled roof and the hoisting machinery intact; a separate rockhouse attached to the headframe, measuring 20 feet by 100 feet; and a third building, perhaps a dryhouse, 20 feet wide and 30 feet long. All three surface buildings are wood-framed, with gabled roofs and are covered with corrugated sheet metal.
[Benedict, Red Metal, pp. 129, 139, 153]

BALTIC MINE (1901,1902)
Southeast of the South Range
Baltic

South Range
16.376060.5213360
Houghton

The last major new deposit opened in Houghton County was the Baltic or South Range Lode, discovered in 1897 and quickly developed by William A. Paine of the Paine-Webber investment house, along with John Stanton. The Baltic Mine became part of the Copper Range Consolidated Company, formed in 1901 and dominated by Paine and Stanton. Two rectangular rough rubble stone buildings with gabled steel trussed roofs remain at this site. The compressor building, 36 feet by 58 feet, was completed in 1901 and originally housed a compressor with a capacity of 4,000 cubic feet per minute at 70 pounds per square inch. The second building served as a combination machine shop and smithy, measures 50 feet wide and 132 feet long, and was completed in 1902.
[Sawyer, pp. 459, 465-466; Gates, pp. 65, 71-75; Stevens, II (1902), p. 126; Stevens, III (1903), p. 195; "The First Annual Report of the Copper Range Consolidated Company for the Year Ending December 31, 1902," (Boston, 1903), p. 25]

CALUMET AND HECLA MINING COMPANY
BLACKSMITH SHOP (1883) — Laurium
Mine St. — 16.390140.5232760
Calumet — Houghton

The Calumet and Hecla Mining Company was incorporated in 1871 with a capitalization of $2.5 million and was a consolidation of the Calumet, Hecla, Portland, and Scott Mining Companies, none of which were financially successful or well-managed. Under the direction of Alexander Agassiz, the Calumet and Hecla Company became the largest and by far the most successful copper mining firm in the Upper Peninsula. During its first fifty years of operation, the company paid out over $150 million in dividends to its stockholders. The complex of buildings which remain in Calumet were constructed during the 1880's and were the second generation of mine buildings at this site. The Blacksmith Shop, built in 1883, was originally used as a locomotive house. Built of rock masonry construction, it measures 54 feet by 96 feet and has a hipped roof.
[Eckert; Sawyer, p. 452; NR]

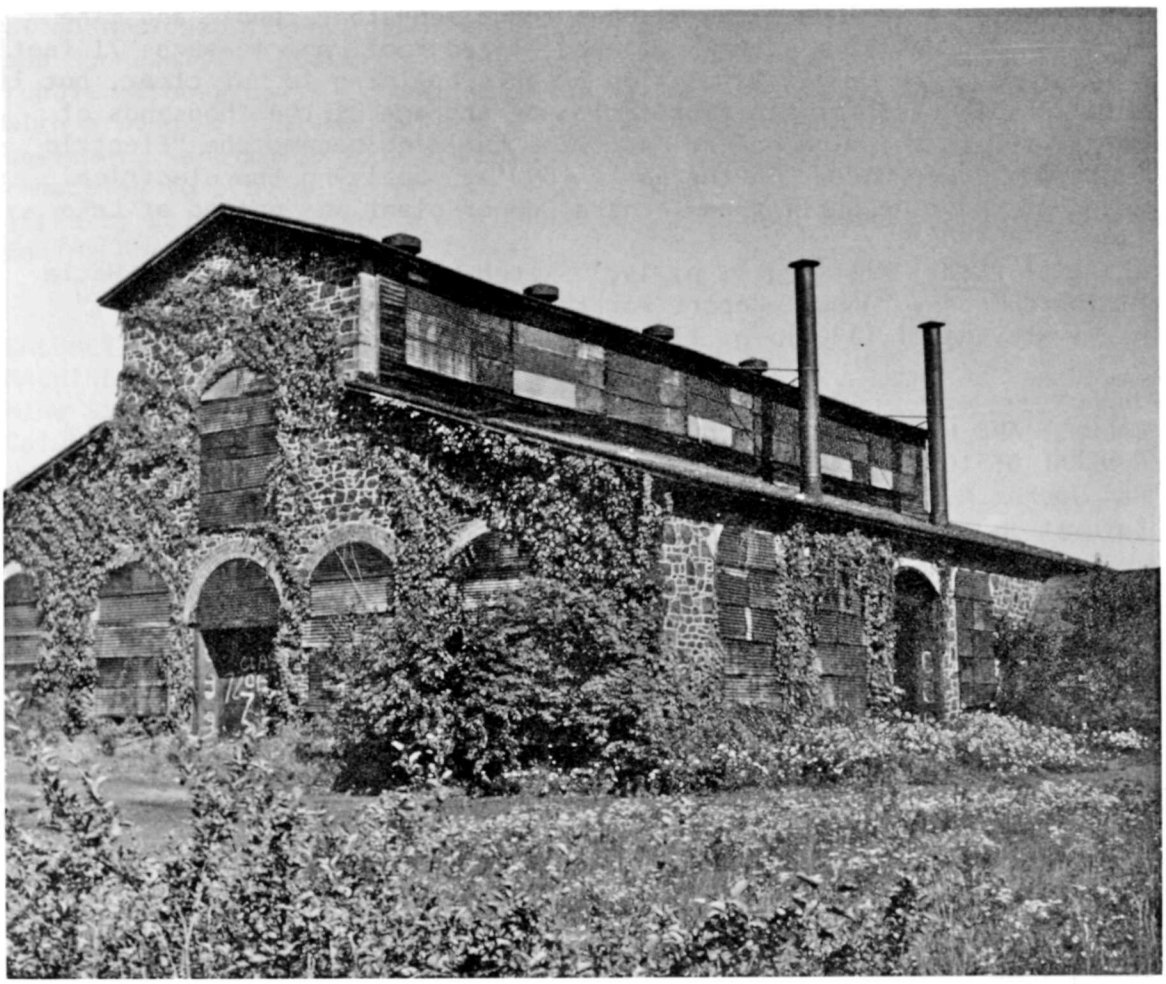
CALUMET AND HECLA MINING COMPANY
DRILL SHOP (c.1885) — Laurium
Mine St. — 16.390390.5233260
Calumet — Houghton

Drills used in the Calumet and Hecla Company's copper mines were manufactured and sharpened in this large shop. The company was using 318 power drills in its mines in 1908, reportedly the most used in any American mine. The building consists of two rectangular wings, both of rough rubble and mortar construction. One wing is 60 feet wide and 90 feet long, with a gabled roof with clerestory, while the other wing is 50 feet wide and 180 feet long.
[Sawyer, p. 452]

CALUMET AND HECLA MINING COMPANY
DRYHOUSE NUMBER TWO (c.1885) — Laurium
Mine St. — 16.390390.5233260
Calumet — Houghton

The miners working in copper mines such as this ended their day by showering, exchanging their wet clothes for dry ones, and leaving the

wet clothes to dry overnight in a building usually called either the Dryhouse or simply the Dry. The Dryhouse Number Two is a single-story rectangular rock masonry building, with a slightly gabled roof, 60 feet wide and 110 feet long.



Calumet and Hecla Mining Company Drill Shop (c.1885), Calumet

CALUMET AND HECLA MINING COMPANY
GEARHOUSE (c.1890)
Mine St.
Calumet

Laurium
16.390380.5233060
Houghton

The Gearhouse was constructed in the 1880's, but rebuilt in the early 1890's after a serious fire. It has rough sandstone rubble and mine rock masonry walls, a steeply pitched hipped roof, and measures 71 feet by 78 feet. The original function of this building is not clear, but it was probably used for the fabrication or storage of the thousands of gears used in the mine operations. The building became the "Electric Light and Power House" in the early 1890's, supplying the electrical needs of the mine until a new central power plant was opened at Lake Linden in 1906.
[Eckert; PLSMI, XII (1906), p. 35; "Sketch," p. 13; Calumet and Hecla Mining Company, "Annual Report for the Year Ending April 30, 1907," p. 4; Stevens, I (1900), p. 174; NR]

CALUMET AND HECLA MINING COMPANY
GENERAL OFFICES (c.1890)
Red Jacket Ave. at Calumet Ave.
Calumet

Laurium
16.390435.5232900
Houghton

The handsome General Office Building of the Calumet and Hecla Mining Company reflects both the success of the company and one of the reasons for its success. It was built in the early 1890's, with two later additions. The original section was designed by Shaw and Hunnewell of Boston and the later additions by Charlton and Kuenzli, architects, Marquette and Milwaukee. All three segments of this three and one-half story masonry building have a virtually identical design, with walls of reddish-brown rubble trimmed with brick over the windows and doorways. The East Section is 46 feet by 69 feet; the West Section is 22 feet by 30 feet; and the North Section is 35 feet by 46 feet. This building, like most of the others in the Calumet and Hecla Company's complex, utilized inexpensive local materials, often waste rock generated by the mining operations.
[Eckert; NR]

CALUMET AND HECLA MINING COMPANY
LIBRARY (1898)
101 Red Jacket Ave.
Calumet

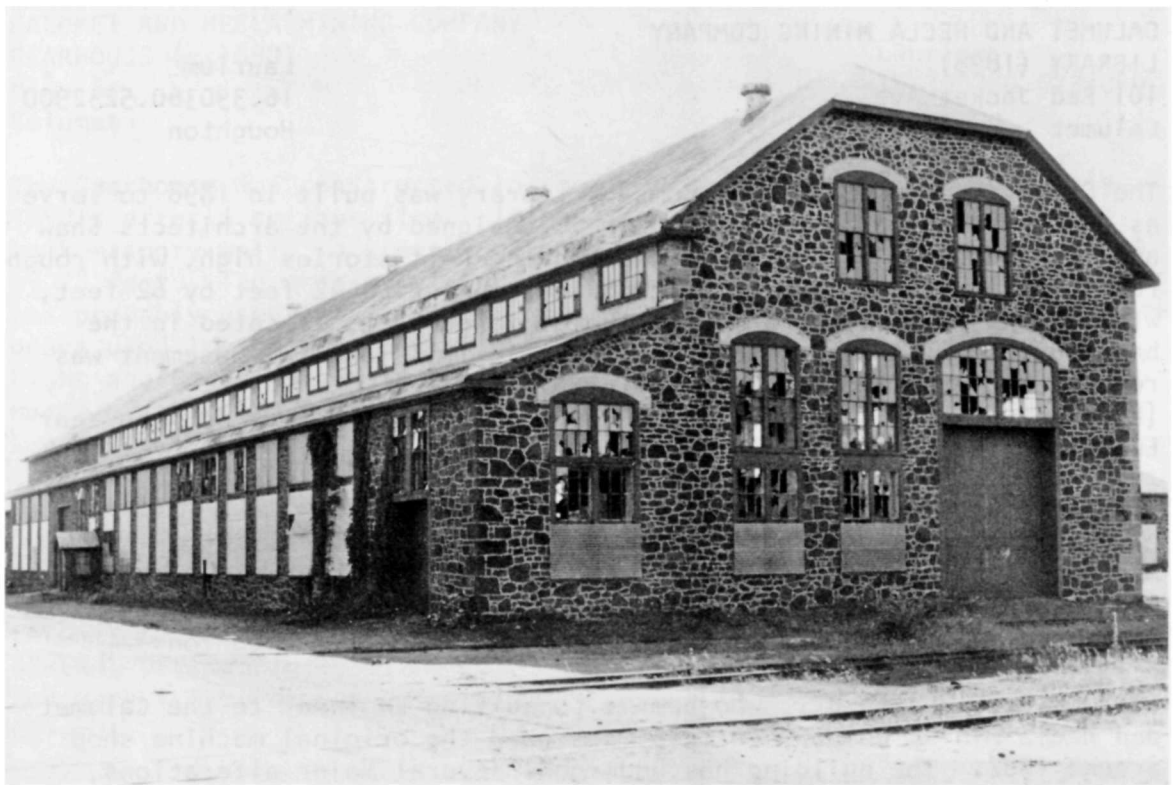
Laurium
16.390360.5232900
Houghton

The Calumet and Hecla Mining Company Library was built in 1898 to serve as an employee library and bathhouse. Designed by the architects Shaw and Hunnewell of Boston, it is two and one-half stories high, with rough rubble masonry walls trimmed with brick, measuring 42 feet by 62 feet, with a wing 32 feet by 38 feet. The employee baths, located in the basement, were moved to a new bathhouse in 1911, and the basement was remodeled to provide additional library space.
[Eckert; Calumet and Hecla Mining Company, "Annual Report for the Year Ending April 30, 1911," p. 7; NR]

CALUMET AND HECLA MINING COMPANY
MACHINE SHOP (c.1882,1907,1911)
Mine St. at Depot St.
Calumet

Laurium
16.390210.5232760
Houghton

Erasmus D. Leavitt, Jr., who became Consulting Engineer to the Calumet and Hecla Mining Company in 1874, designed the original machine shop around 1882. The building has undergone several major alterations, including an addition made in 1898, followed by a major reconstruction of the entire building in 1907. Finally, in 1911, an addition 92 feet long was made to the southernmost portion of the building and a bay was added to the eastern side of the structure, measuring 17 feet wide and 230 feet long. The surviving building, probably dating entirely from 1907 and 1911, is a two-story rectangular structure of coursed mine rock construction, 54 feet wide and 416 feet long, with a clerestory to admit additional light.
[Eckert; Smithsonian Institution, "Index to Leavitt Collection of Engineering Drawings"; Sawyer, p. 453; Stevens, VIII (1908), p. 462; Calumet and Hecla Mining Company, "Annual Report for the Year Ending April 30, 1911," p. 7; NR]



Calumet and Hecla Mining Company Machine Shop (c.1882,1907,1911), Calumet

CALUMET AND HECLA MINING COMPANY
MAN ENGINEHOUSE (c.1890)
Mine St.
Calumet

Laurium
16.390210.5232760
Houghton

This building housed the small steam-powered hoist used to raise the cages carrying the miners underground to the workings. At a large-scale multiple shaft mine like Calumet and Hecla, there were several shafts, usually called man-shafts, which were used only for the movement of men and supplies, while the ore was brought to the surface through larger shafts equipped with heavier-duty engines. This rectangular brick building is 30 feet wide and 40 feet long, with a hipped roof.
[Eckert; NR]

CALUMET AND HECLA MINING COMPANY
PATTERN SHOP (c.1885)
Mine St.
Calumet

Laurium
16.390100.5232880
Houghton

The Pattern Shop is a single-story rectangular rough rubble masonry building, 33 feet wide and 130 feet long, with a sharply pitched roof, and a small lean-to addition, 20 feet square, adjoining it on the north side. This shop was probably constructed in the mid-1880's, when the rest of this complex of mine buildings was completed. The wooden patterns used for setting sand for castings were made here, so the building is logically situated near the blacksmith shop, where castings were made.

Calumet and Hecla Mining Company Man Enginehouse (c.1890), Calumet

CALUMET AND HECLA MINING COMPANY
ROUNDHOUSE (1888,1902,1907,1928)
Mine St. at Depot St.
Calumet

Laurium
16.390280.5232760
Houghton

This roundhouse was constructed in 1888, with later additions in 1902, 1907, and 1928, to service the locomotives of the Hecla and Torch Lake Railroad, which transported the copper ore from this area to the stamping and smelting works owned by the Calumet and Hecla Company on Torch Lake. The building is constructed of coursed mine rock masonry, a full semi-circle, with stalls 75 feet deep on the south end and 90 feet deep on the north end. There are two additions extending easterly from the semi-circle; a machine shop, 60 feet by 75 feet, and a general storage area, 37 feet by 80 feet. The turntable, a center-mounted steel girder type 60 feet long, bears the nameplate, "Wrought Iron Turntable, Built by Teffert & Wood, Phillipsburg, N.J., R. Boler, C.E."
[Eckert; NR]

CALUMET AND HECLA MINING COMPANY
SUPERIOR BOILERHOUSE (1880,1895)
Mine St.
Calumet

Laurium
16.390500.5233140
Houghton

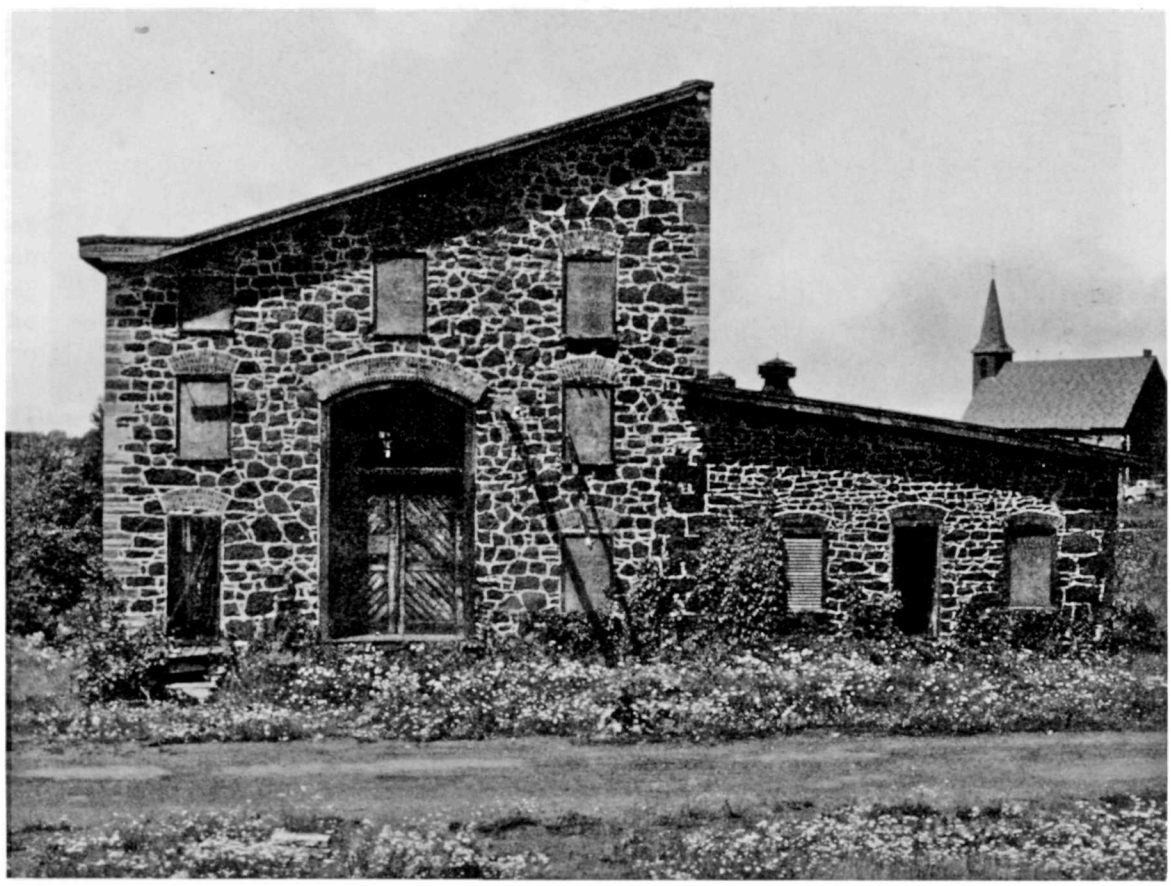
The Superior Boilerhouse supplied steam to the adjacent enginehouse of the same name (see other entry). The original building, designed by the engineer Erasmus D. Leavitt, Jr., is built of coursed rubble masonry, measuring 60 feet by 77 feet, with a steeply hipped roof and an attached brick smokestack, 150 feet tall, with a bore of 5 feet, 6 inches. The north addition, or New Boilerhouse, also designed by Leavitt in 1895, is a rectangular building with sandstone rubble walls and a gabled roof, measuring 69 feet by 154 feet.
[Eckert; Smithsonian Institution, "Index to Leavitt Collection of Engineering Drawings"; "Sketch," p. 10; Stevens, I (1900), p. 174; NR]

CALUMET AND HECLA MINING COMPANY
SUPERIOR ENGINEHOUSE (1880)
Mine St.
Calumet

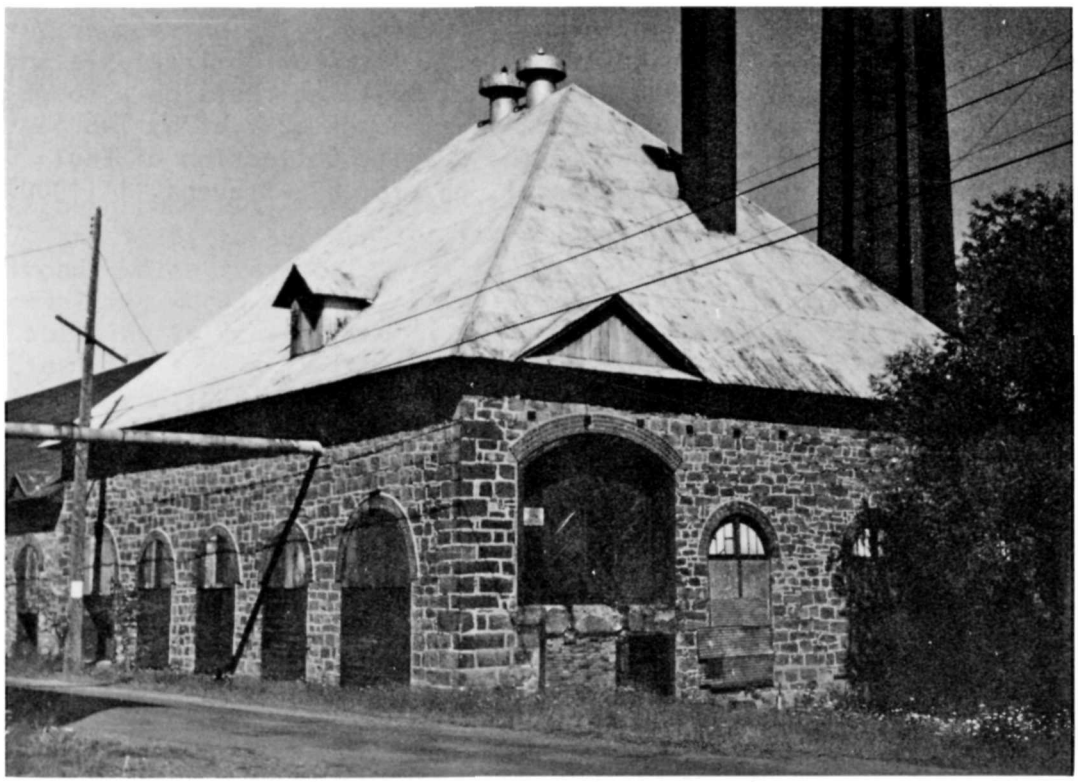
Laurium
16.390500.5233140
Houghton

Erasmus D. Leavitt, Jr., Consulting Engineer for the Calumet and Hecla Mining Company, designed the Superior Enginehouse (Main Hoist Enginehouse),

built in 1880. The building originally housed a 4,700 horsepower Vertical Rocker Compound Engine built by I.P. Morris of Philadelphia and installed in 1881. This three-story brick building rests on a rough rubble foundation, has hipped roofs, and measures 62 feet by 146 feet. [Smithsonian Institution, "Index to the Leavitt Collection of Engineering Drawings"; Benedict, Red Metal, pp. 78, 89; Stevens, I (1900), p. 174; "Sketch," pp. 9-10, NR]



Calumet and Hecla Mining Company Pattern Shop (c.1885), Calumet



Calumet and Hecla Mining Company Superior Boilerhouse (1880,1895), Calumet

CALUMET AND HECLA MINING COMPANY
WAREHOUSE NUMBER ONE (c.1880)
Red Jacket Ave.
Calumet

Laurium
16.390240.5232900
Houghton

This large brick warehouse was built by the Calumet and Hecla Mining Company around 1880 and is the oldest warehouse remaining on this site. It is a two-story rectangular brick building, with a gabled roof, measuring 53 feet wide and 204 feet long.

CENTENNIAL MINE HOISTS (c.1890,1900)
West of US-41, M-26
Centennial

Ahmeek
16.391560.5234760
Houghton

Two mine hoists remain at the site of the Centennial Mining Company's Shaft Number Three. One is a steam-driven Lidgerwald Hoist dating from about 1890, while the second is a W.A. Box steam-driven hoist, c.1900, which was originally in a Colorado mine, and then served at Tamarack Mine Shaft Number Five before being moved to its present location. It has been modified so as to be driven by an electric motor, a General Electric 500 horsepower, 2,200 Volt, 125 Amp unit which operates at 442 R.P.M. Nearby, there is a small wooden shafthouse for an exploratory shaft, erected in the early 1950's.
[Benedict, Red Metal, pp. 137-138; Sawyer, p. 462]

CENTENNIAL MINE
SHAFTS NUMBERS ONE AND TWO (1899)
East of US-41, M-26
Centennial

Ahmeek
16.392420.5234370
Houghton

The Centennial Mining Company was organized in 1896 and began working the Kearsarge Lode in 1899. Controlling interest in the company passed to the Calumet and Hecla Company in 1907, and Centennial merged with Calumet and Hecla in 1923. This was one of the smaller producers in Michigan's copper district, with an output of only 2.5 million pounds in 1909. Two surface buildings remain at this site, a rectangular blacksmith shop, of cut coursed Jacobsville sandstone, with a gabled roof (partially collapsed), measuring 50 feet by 108 feet, and a dry-house, 25 feet by 40 feet, with a gabled roof and rough rubble masonry walls.
[Benedict, Red Metal, pp. 128, 137; Sawyer, p. 462; Stevens, V (1905), p. 306]

CHAMPION MINE (1902)
Southeast of Painesdale
Painesdale

South Range
16.373200.5210300
Houghton

The Champion Mine was opened in 1899 as a result of the discovery of the Baltic or South Range Lode in 1897. It was initially owned jointly by the St. Mary's Mineral Land Company and William A. Paine of the Paine-Webber investment house. The Copper Range Consolidated Company, formed

in 1901 by William Paine and John Stanton, acquired complete control of the Champion in 1931. This was one of the few copper mines in the Upper Peninsula to operate regularly during the 1930's, and it ran intermittently until 1967. The surviving structures include a steel headframe (see other entry) and three major surface buildings, all rectangular with gabled roofs and cut coursed sandstone walls. They include a blacksmith shop (50 feet by 128 feet), a machine shop (60 feet by 144 feet), and the hoisthouse (40 feet by 73 feet).
[Sawyer, pp. 459, 465; Gates, pp. 72, 162; Stevens, V (1905), p. 314; Stevens, VIII (1908), p. 515; J.F. Jackson, "The Mine Machine Shop," PLSMI, VIII (August 1902), pp. 89-92; "First Annual Report of the Copper Range Consolidated Company for the Year Ending December 31, 1902," (Boston, 1903), p. 35]

Champion Mine Machine Shop (1902), Painesdale

CHAMPION MINE
"E" SHAFT HEADFRAME (1906,1908)
Southeast of Painesdale
Painesdale

South Range
16.373200.5210300
Houghton

The Champion Mine Headframe was constructed in 1906, and enlarged in 1908 by the Wisconsin Bridge and Iron Company. It is a steel-framed structure with a sheet metal exterior. There are two distinct segments: the shafthouse proper, measuring 30 feet by 40 feet at the base and extending 60 feet high, topped by a 15 foot square portion extending an additional 20 feet, and an attached lean-to, 40 feet wide and 50 feet long. A large reservoir of water, located deep underground now serves as the source of water for the cities of Houghton and Hancock and the headframe is still used as the entry point for these underground waterworks.
[Stevens, VIII (1908), p. 514]

MOHAWK MINE (c.1900,1916)
Fourth St.
Mohawk

Mohawk
16.397120.5239600
Keweenaw

The Mohawk Mining Company was organized by John Stanton in 1898 with a capital of $2.5 million to exploit the Kearsarge Lode, and it quickly became a major new producer. By 1909, the Mohawk employed over 1,000 men and produced 11.25 million pounds of copper. It was purchased by the Copper Range Company in 1934, by which time the deposits were nearly exhausted. Two surface buildings remain at this site: a rectangular rough rubble masonry building with a gabled roof, 20 feet wide and 30 feet long, built around 1900, and a large concrete block structure, 60 feet by 200 feet, constructed in 1916 and now used as offices and garage for the Keweenaw County Road Commission.
[Benedict, Red Metal, p. 153; Sawyer, p. 494; Gates, pp. 65, 71, 160, 162]

OSCEOLA CONSOLIDATED MINING COMPANY
SOUTH KEARSARGE BRANCH (c.1900)
East of US-41, M-26
New Allouez

Ahmeek
16.394180.5238100
Keweenaw

The Osceola Consolidated Mining Company absorbed the South Kearsarge Mine (formerly the Iroquois), with its 1,120 acres of mineral lands in

Champion Mine "E" Shaft Headframe (1906,1908), Painesdale

1897 and renamed it the South Kearsarge Branch. The property was developed in 1899, and it was the fifth new mine opened on the Kearsarge Lode in the late 1890's. All that remains at this site are the ruins of a rectangular one-story brick building, probably a dryhouse, 50 feet wide and approximately 70 feet long.
[Stevens, I (1900), p. 109; Stevens, X (1910), p. 633; PLSMI, XII (1906), p. 37]

QUINCY MINING COMPANY
BLACKSMITH SHOP (1900) — Hancock
East of US-41 — 16.380780.4221680
Quincy — Houghton

The Quincy Mine Blacksmith Shop, built in 1900, originally contained twelve forges, steam hammers, grindstones, and other equipment. It is constructed of cut coursed red sandstone blocks, and measures 50 feet by 154 feet, with an ell measuring 50 feet by 90 feet. It has gabled roofs, one of which is partially collapsed. At the time of construction, it was called "the model smithy of the copper district".
[Stevens, I (1900), p. 223; Stevens, II (1902), p. 244]

QUINCY MINING COMPANY
BOILERHOUSE NUMBER FIVE (1912) — Hancock
East of US-41 — 16.380720.5221220
Quincy — Houghton

This boilerhouse was erected in 1912 to supply steam to the adjacent Hoisthouse Number Two (see other entry). It replaced the Boilerhouse Number Four, located about one thousand feet from the Hoisthouse Number Two and was connected to it with a fourteen inch steam line. This rectangular brick building, measuring 56 feet by 92 feet, was built by the Worden Allen Company at a cost of $19,400. The complete installation included eight boilers, no longer extant, supplied by the Duluth Boiler Works and the Gogebic Steam Boiler Works at a cost of $10,262; a concrete smokestack, eighty-four inches in diameter at the base and 144 feet high, built by the Webber Chimney Company for $2,482; and a railroad trestle leading over the coal bins, built by Quincy employees. The trestle and smokestack remain, but none of the other machinery or equipment has survived.

Quincy Mining Company Machine Shop (1900), Quincy

QUINCY MINING COMPANY
MACHINE SHOP (1900)
East of US-41
Quincy

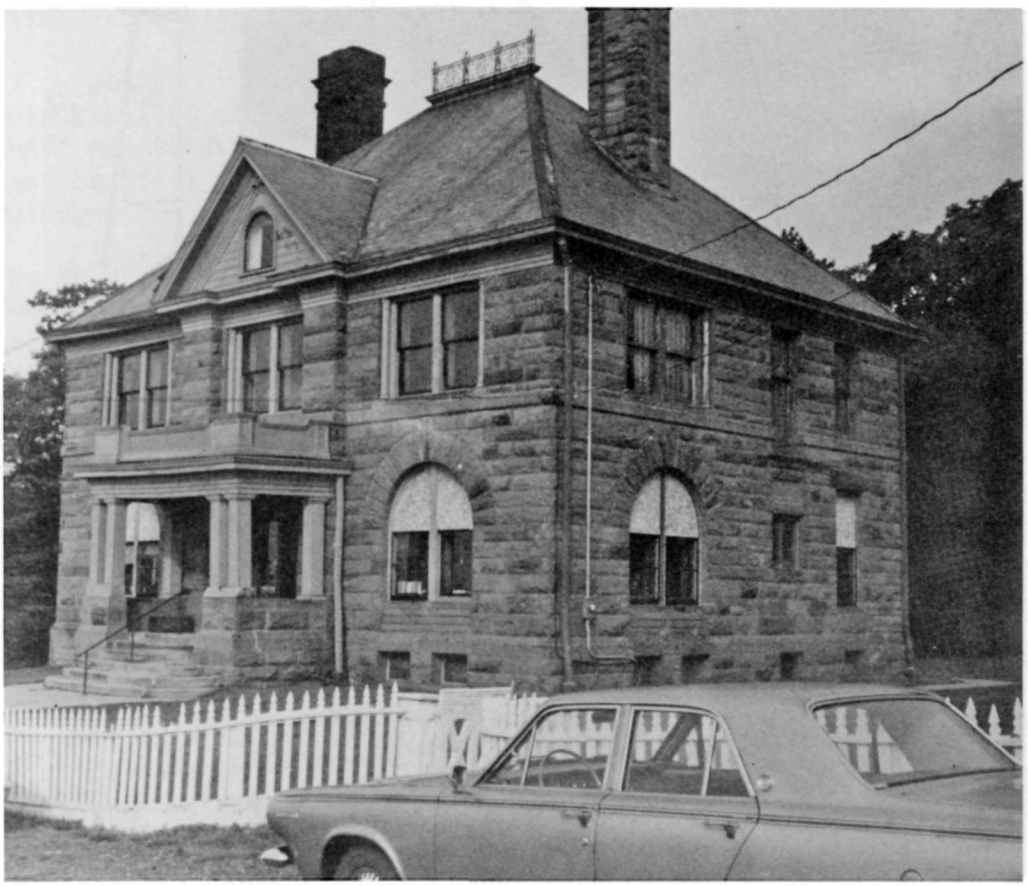
Hancock
16.380780.5221680
Houghton

This machine shop was constructed in 1900 to replace an older shop. It is a two-story rectangular brick building with a gabled roof, with clerestory, resting on a red sandstone block foundation, measuring 62 feet wide and 145 feet long.
[Stevens, I (1900), p. 223]

QUINCY MINING COMPANY
MINE OFFICE BUILDING (1897)
West of US-41
Quincy

Hancock
16.380220.5221040
Houghton

The construction of this handsome office building began in late 1895 when the first Jacobsville sandstone blocks were delivered to the site, and the work was completed in 1897 at a total cost of $29,247. It is a two-story rectangular building measuring 45 feet by 56 feet, with walls of cut coursed sandstone blocks, windows arched with sandstone blocks, and a hipped roof.



Quincy Mining Company Mine Office Building (1897), Quincy

Quincy Mining Company Shaft Number Two Headframe (1907), Quincy

QUINCY MINING COMPANY
ROUNDHOUSE (1890,1894,1900)
East of US-41
Quincy

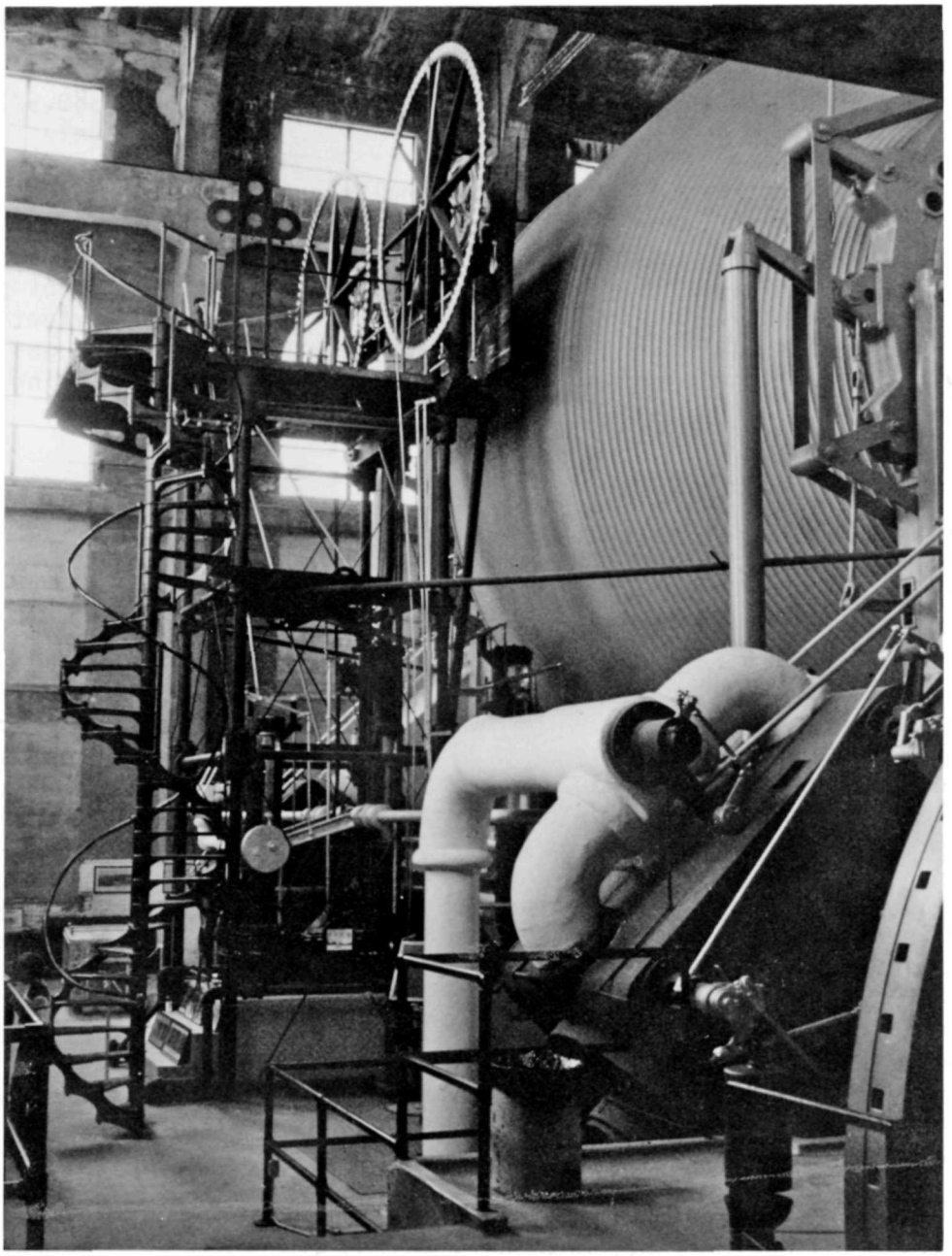
Hancock
16.380380.5221040
Houghton

This roundhouse was begun in 1890 when the Quincy Mining Company built the Quincy and Torch Lake Railroad to link its mines in Quincy with its stamping plant on Torch Lake. It originally contained two stalls, each 15 feet by 64 feet, with walls of rough rubble masonry and a roof pitched slightly to the rear of the building. A third stall, also 15 feet by 64 feet, was added in 1894, and a fourth, of the same dimensions, was built in 1900, along with additional space for a machine shop, measuring 36 feet by 40 feet, added on to the rear of the first three stalls.
[Stevens, I (1900), p. 224]

QUINCY MINING COMPANY
SHAFT NUMBER TWO HEADFRAME (1907)
East of US-41
Quincy

Hancock
16.380540.5221340
Houghton

The headframe (shafthouse) for the Quincy Mining Company Shaft Number Two was constructed in 1907 by the American Bridge Company and used until the mine ceased operations in 1931. It replaced a wooden headframe (1895) which had numerous gables and was torn down. This steel-framed structure, covered with corrugated sheet metal siding, is 149 feet long, and 44 feet wide at the base, and is 19 feet by 29 feet at the top, some 147 feet above the base. The roof on the westernmost segment is 21 feet high, but is pitched in two distinct segments as it runs to the top of the headframe. It is pitched about 20 degrees for about 60 feet measured horizontally, and then it is pitched at about 45 degrees for an additional 30 feet. The base of the tallest portion of the headframe consists of a round riveted steel storage bin, 44 feet in diameter, resting on a round concrete foundation. The skips containing the copper ore were dumped into this bin and then loaded into railroad cars which could be pulled underneath the bin. Next to the headframe there are two skeletal steel stanchions, about 100 feet tall, which support the steel cables leading from the hoisthouse into the headframe. There were originally eight of these stanchions. The initial crushing of the ore was carried out inside the shafthouse by a 40 ton steam hammer. There are also separate chutes and bins for mass copper and poor rock, making this structure a preliminary processing plant.
[Stevens, VIII (1908), p. 1152; T.C. Desollar, "Rockhouse Practice of Quincy Mining Company," PLSMI, XVII (August 1912), pp. 217-226]



Quincy Mining Company Shaft Number Two Hoist (1920), Quincy

QUINCY MINING COMPANY
SHAFT NUMBER TWO HOIST (1920)
East of US-41
Quincy

Hancock
16.380720.5221220
Houghton

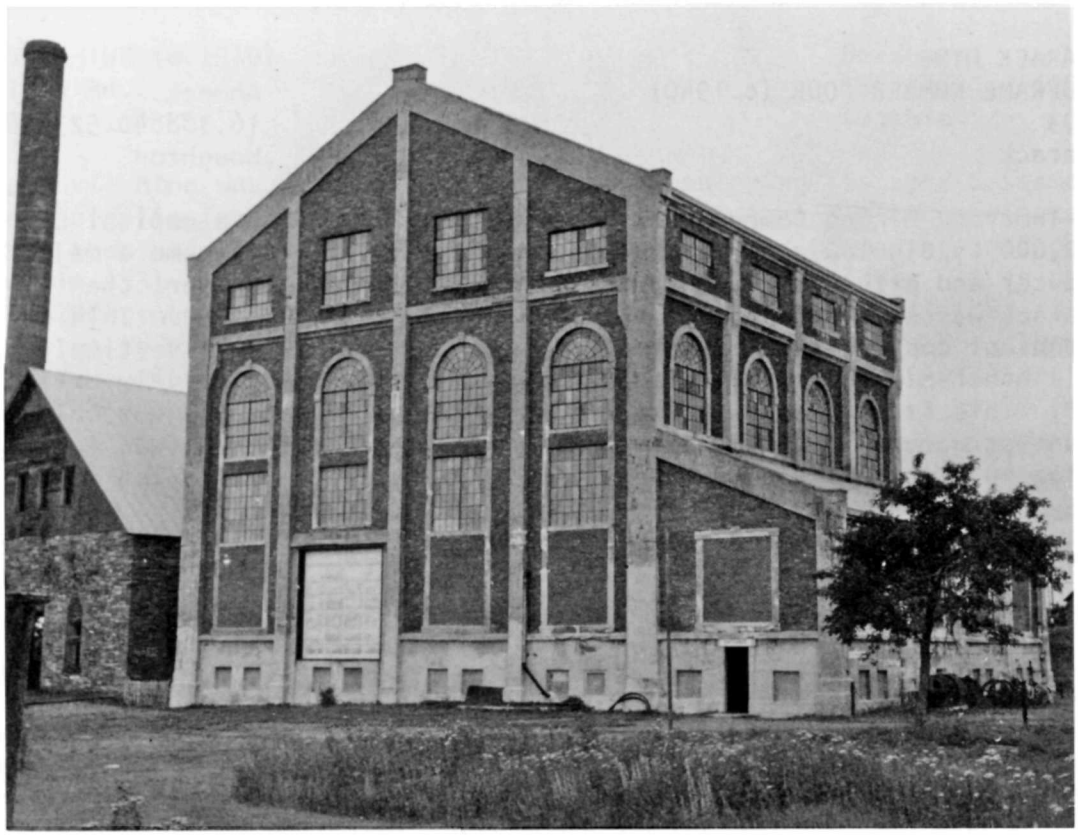
The Quincy Copper Mining Company, organized in 1848, mined the rich Pewabic Lode from 1856 until 1931. Shaft Number Two began to approach a depth of 8,000 feet, measured on an incline, around 1910, and a new hoist was ordered from the Nordberg Manufacturing Company, a major supplier of hoisting equipment for Upper Peninsula mines. The construction of the new hoist was delayed during World War I and was not complete until 1920, when it was installed in a new hoisthouse (see other entry). This is the largest steam-powered mine hoist ever manufactured. The hoist alone cost nearly $182,000 and the total costs, including the hoisthouse, the hoist foundation, pulley stands, and other items came to $371,000. The specifications of the hoist are impressive: overall, it measures 60 feet by 54 feet by 60 feet high, weighs 1.765 million pounds, and rests on a foundation of 3,200 cubic yards of concrete; the hoist drum is a cylinder-conical type, 30 feet in diameter at the center and 16 feet in diameter at the ends, with a capacity of 13,000 feet of one and five-eighths inch wire rope; the engine is a Corliss cross-compound type, with two high pressure cylinders of 32 inch diameter, two low pressure cylinders of 60 inch diameter, a stroke of 66 inches, rated at 2,500 horsepower; it could raise a five ton skip with a ten ton load at a maximum speed of 3,200 feet per minute. The hoist was operated by a hoistman, but was also equipped with a Lilly Hoist Controller, manufactured by the Logan Engineering Company. The hoist controller was a set of automatic safety devices which would prevent accidents due to human error by stopping the hoist.
[Ray W. Armstrong, "Compound Steam Hoist Installation of the Quincy Mining Company," PLSMI, XXII (1922), pp. 39-41; "Nordberg Compound Steam Hoisting Engine, Quincy Mining Company, Number Two Shaft, Hancock Michigan," PLSMI, XXII (1922), pp. 192-194; "The World's Largest Compound Steam Hoisting Engine," PLSMI, XXVII (1929), pp. 18-20; "The Quincy Hoist," Engineering and Mining Journal, December 11, 1920, p. 1,126; NR]

QUINCY MINING COMPANY
SHAFT NUMBER TWO HOISTHOUSE (1895) — Hancock
East of US-41 — 16.380720.5221220
Quincy — Houghton

This hoisthouse was begun in 1894 and completed the following year at a cost of $90,228. It was built in conjunction with a new combination shaft-rockhouse (headframe) at Shaft Number Two, necessitated by the great depths (more than 4,600 feet) achieved at that time, as well as the decision to replace the three ton capacity skips with new skips having a capacity of six tons. The building is constructed of cut coursed sandstone, with a gabled roof, and measures 58 feet by 94 feet. The hoist, built by the E.P. Allis Company of Milwaukee, was powered by a pair of cylinders measuring 48 inches by 84 inches, and had a drum 26 feet in diameter and 12 feet long, with a capacity of 7,500 feet of one and one-half inch steel cable. None of the hoisting equipment is extant. This hoist served the Number Two Shaft until 1920, when it was replaced by a larger capacity hoist (see other entry).
[Stevens, IV (1904), p. 604]

QUINCY MINING COMPANY
SHAFT NUMBER TWO HOISTHOUSE (1920) — Hancock
East of US-41 — 16.380720.5221220
Quincy — Houghton

The Quincy Copper Mining Company, organized in 1848, began exploiting the rich Pewabic Lode in 1856 and continued mining this deposit until 1931. Shaft Number Two began to approach a depth of 8,000 feet on an incline around 1910, and a new hoist was needed for these great depths. The Nordberg Manufacturing Company began work on the new hoist before World War I, but it was not completed and erected until 1920. The old hoisthouse (see other entry) was too small for the new hoist, so this reinforced concrete building was erected. It is 72 feet by 76 feet by 82 feet high, with twenty load-bearing pilasters, an exterior of brick veneer, and a gabled roof. There is also a smaller attached building for the condensing equipment, measuring 23 feet by 76 feet by 32 feet high. It was built at a cost of $57,924.
[Ray W. Armstrong, "Compound Steam Hoist Installation of the Quincy Mining Company," PLSMI, XXII (1922), pp. 39-41; "Nordberg Compound Steam Hoisting Engine, Quincy Mining Company, Number Two Shaft, Hancock, Michigan," PLSMI, XXII (1922), pp. 192-194; "The World's Largest Compound Steam Hoisting Engine," PLSMI, XXVII (1929), pp. 18-20; NR]



Quincy Mining Company Shaft Number Two Hoisthouses (1895,1920), Quincy

QUINCY MINING COMPANY
SUPPLY BUILDING (1893)
East of US-41
Quincy

Hancock
16.380625.5221430
Houghton

This supplyhouse was begun in the spring of 1893 and completed in November at a cost of about $18,000. It is a simple rectangular building, of cut rough coursed sandstone construction, with a gabled roof, measuring 40 feet wide and 80 feet long.

TAMARACK MINE
HEADFRAME NUMBER FOUR (c.1940)
M-203
Tamarack

Ahmeek
16.388840.5234180
Houghton

The Tamarack Mining Company was organized in 1882, with a capital of $250,000 by Bigelow and Clark of the Osceola Mine. It became a major producer and although its output had peaked a decade earlier, the Tamarack was still producing over 13 million pounds in 1909. This was an unusual copper mine in that all of its shafts were sunk vertically, while other Michigan producers used inclined shafts exclusively until 1900. This steel headframe, with a sheet metal exterior is the only extant structure at this location. It is 10 feet wide, 20 feet long, stands 40 feet tall, and was used primarily to deliver supplies to the underground workings.
[Sawyer, p. 456; Benedict, Red Metal, pp. 131, 137; Gates, pp. 66-68, 90]

ANVIL MINE (c.1910)
Tilden Rd.
Anvil

Bessemer
15.728850.5150780
Gogebic

The Anvil Mine was opened in 1886 and began shipping its soft Bessemer ore the following year. It was owned by the Newport Mining Company until 1917, then had several owners until Pickands Mather Company gained control in 1931 and operated the mine until it closed in 1957. It shipped 4,447,000 tons of iron ore during the period 1887-1950. All that remains at this site are three rectangular brick buildings: a one-story structure, 15 feet by 25 feet; a two-story building 40 feet wide and 50 feet long; and a second two-story building measuring 45 feet by 75 feet. [LSIO, p. 53; Sawyer, p. 511]

CARDIFF MINE (1919)
County Rd. 653
Mineral Hills

Iron River
16.371780.5107810
Iron

The Cardiff Mine was not one of the most successful iron mines in Michigan's Menominee Range. The Wickwire Mining Company, a subsidiary of the Wickwire Steel Company, opened this mine in 1919, but it only shipped a total of 144,000 tons of high phosphorus hematite ore in two years, 1922-1923 and was permanently closed in the late 1920's. The surviving surface buildings include the enginehouse, a rectangular brick building, 15 feet by 60 feet, with a gabled roof, and the dryhouse, a similar structure 20 feet wide and 40 feet long. The headframe or shafthouse is essentially a steel framework designed to support the pulleys which in turn support the steel cables used to raise ore, men, and materials from the workings. This steel headframe is covered by a sheet metal exterior and measures 20 feet by 25 feet at the base, tapers to approximately 6 feet by 8 feet at the top, and is 40 feet tall. [LSIO, p. 147]

CASPIAN MINE (1920,1923)
Museum Rd.
Caspian

Iron River
16.374310.5102750
Iron

The Caspian Mine was opened in 1903 by the Verona Mining Company, which later sold the property to the Pickands Mather Company. This was one of the more productive mines in Iron County, shipping over 6.6 million

Caspian Mine Headframe (1920), Caspian

tons of high phosphorus hematite ore in 1903-1937. The original headframe or hoisthouse was replaced in 1920 with a steel structure which is 106 feet high, 25 feet by 10 feet at the base, tapering to about 10 feet square at the top. This steel-framed structure, with an exterior of tin sheeting, served to support the hoisting equipment and to protect it from the elements. The steel stanchions which supported the steel cables leading from the powerhouse to the headframe are standing nearby. This is the second oldest headframe remaining in Iron County and the fifth oldest in Michigan. The powerhouse, now used as a museum, is a rectangular brick building, 30 feet wide and 90 feet long, with a gabled roof. None of the original hoisting equipment or boilers are extant.
[Sawyer, p. 521; LSIO, p. 148]

CHAPIN MINING COMPANY
HAMILTON SHAFT (c.1900) — Iron Mountain
E. Main St. and N. Milwaukee St. — 16.417400.5075220
Iron Mountain — Dickinson

The Hamilton Mine was discovered by John T. Jones in 1883 and was operated by the Hamilton Ore Company until 1893, when it was closed due to flooding. The mine was then purchased in 1894 by the adjacent Chapin Mine, linked to it by a series of new shafts, pumped out and reopened. The surviving surface buildings include a two-story rectangular frame structure, 25 feet by 75 feet, which served as boarding house and dry-house (shower facility) for the miners and a single-story stone building, 40 feet wide and 100 feet long, with a hipped roof, originally used as a machine shop.
[Sawyer, p. 545; PLSMI, XI (1906), pp. 44-45]

CHAPIN MINING COMPANY
LUDINGTON SHAFT (c.1900) — Iron Mountain
Carpenter Ave. at Kent St. — 16.416960.5074860
Iron Mountain — Dickinson

The Ludington Mine was opened in 1879 and was operated by the Ludington Company until 1893, when it was forced to close due to massive flooding. It was purchased the following year by the Chapin Mining Company and was then linked to the nearby Chapin Mine with a series of new shafts. It remained an integral part of the Chapin Mine until it closed down

permanently in 1934. All that remains at this site is the Cornish Pumping Engine (see other entry) and a dryhouse, where the miners showered after work. This two-story stone building is 60 feet wide, 100 feet long, and has a gabled roof.
[Sawyer, pp. 287, 544-545; PLSMI, XI (1906), pp. 44-45]

CLIFF SHAFT MINE (c.1890)
Euclid St. and Lake Shore Drive
Ishpeming

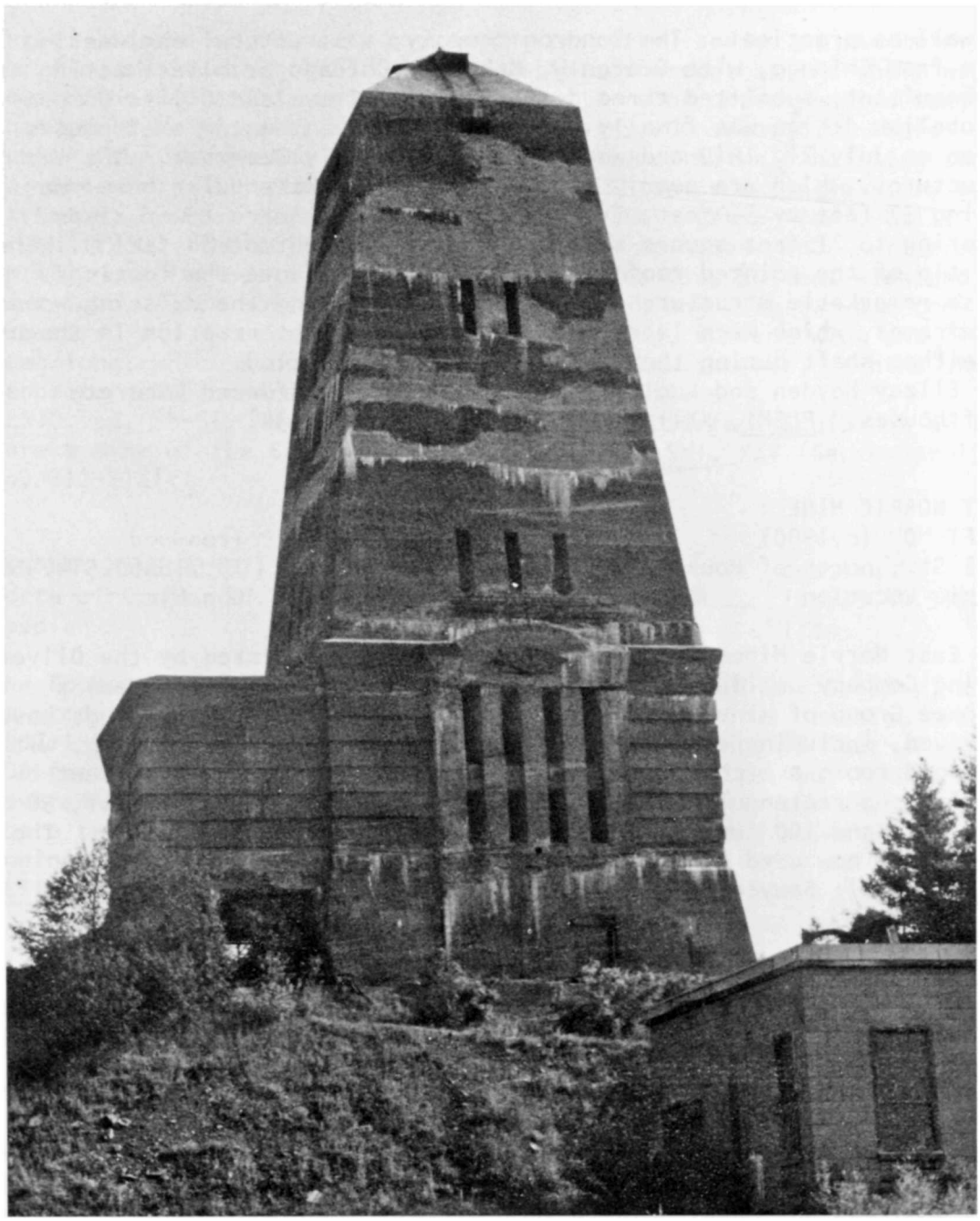
Ishpeming
16.448120.5148620
Marquette

The Cliff Shaft Mine was opened in 1879 by the Iron Cliffs Company, which merged with the Cleveland Iron Mining Company in 1891 to form the Cleveland-Cliffs Iron Company. Hard specular hematite ore was first taken from the mine in such quantity that it became the nation's largest producer of that type of iron ore, and this mine was closed only once (from July 1893 to November 1897) due to lack of demand. It closed in 1967 after producing approximately 28,960,406 tons of high grade hard ore. Five surface buildings are still standing at the site: two concrete headframes (see other entry); a boilerhouse, 120 feet by 40 feet; an irregular "T" shaped building that housed both the enginehouse and the compressionhouse, each section approximately 40 feet by 100 feet; and the machine shop, an irregular rectangle, approximately 110 feet by 30 feet.
[Daily Mining Journal, June 20, 1939; Robert J. Goodman, "Ishpeming, Michigan: A Functional Study of a Mining Community," Ph.D. Thesis, Northwestern University (1948), pp. 58-62]

CLIFF SHAFT MINE
HEADFRAMES (1919)
Euclid St. and Lake Shore Drive
Ishpeming

Ishpeming
16.448120.4158620
Marquette

These two reinforced concrete headframes (shafthouses) were constructed in 1919 to replace two badly deteriorating wooden structures located 280 feet apart. Concrete was selected as the building material because it was fireproof, cheaper than steel, and more readily available than steel. There was a suitable bed of hard gravel located nearby and a plentiful supply of cheap unskilled labor which gave concrete a clear-cut cost advantage over other materials. Because of the prominent location of the headframes in Ishpeming, W.G. Mather, President of the Cleveland-Cliffs Iron Company, argued that the design should be attractive



Cliff Shaft Mine Headframe (1919), Ishpeming

as well as practical. The Condron Company, a structural engineering firm from Chicago, with George W. Maher, a Chicago architect acting as a consultant, submitted three designs to the Cleveland-Cliffs Company. An obelisk design was finally selected. Work on the two shafthouses began on July 21, 1919 and was completed in early December. The two structures, which are nearly identical, have a rectangular base measuring 37 feet by 55 feet, from which a 37 foot square tower rises, tapering to 21 feet square at the eaves at a height of 88 feet 9 inches. The tip of the pointed roof is 96 feet 9 inches above the footings. These remarkable structures were constructed around the existing wooden headframes, which were later torn down, with no interruption in the use of either shaft during the entire construction period.
[J. Ellzcy Hayden and Lucien Eaton, "Building Reinforced Concrete Shafthouses," PLSMI, XXII (August 1922), pp. 124-134]

EAST NORRIE MINE
SHAFT "D" (c.1900) — Ironwood
Mill St., north of Houk St. — 15.718660.5147900
Norrie Location — Gogebic

The East Norrie Mine was opened in 1885 and was operated by the Oliver Mining Company until 1935, when it became part of Republic Steel's Penokee Group of mines and was closed. Several surface buildings have survived, including a 20 foot square wood-framed office building, with a hipped roof; a machine shop, also wood-framed, measuring 45 feet by 150 feet; a rectangular wood-framed dryhouse, with a gabled roof, 30 feet wide and 100 feet long; and three other small outbuildings. The complex is now used by a ready-mix concrete producer.
[LS10, p. 57; Sawyer, p. 512]

EUREKA MINE
SHAFTS NUMBERS THREE AND FOUR (c.1900,1926) — Wakefield
Verona Rd. — 16.269650.5150910
Ramsay — Gogebic

The Eureka Mine, opened by the Castile Mining Company in 1890, was one of the mines opened in the Gogebic Range during the initial boom which began in 1884. It produced nearly three million tons of ore in 1890-1925 and then was combined with the Asteroid Mine in 1926, and the two produced an additional ten million tons in 1926-1950. Shaft Number

Three, located at the west end of the property, served as the main hoisting shaft until 1923, when it was discovered that the shaft was located on faulted ground, but there was a major untouched ore body that could be mined by caving the old shaft. Consequently, Shaft Number Four was opened further east and became the main hoisting shaft for the mine. All that remains at Number Three is a single-story brick dryhouse, 25 feet wide and 70 feet long, with a gabled roof, built around 1900. The major surviving buildings at Number Four were erected in 1923 and include a two-story brick enginehouse, 50 feet wide and 122 feet long, which housed the hoisting engine along with two air compressors, and a one-story brick shops building, 60 feet wide and 240 feet long, which housed the drill shop, blacksmith shop, machine shop, carpenter shop, and other miscellaneous operations.
[LS10, pp. 54-55; Sawyer, p. 512; W.M. Hoen, "Surface Equipment at the Eureka Mine of the Castile Mining Company," PLSMI, XXV (September 1926), pp. 212-218]

FOGARTY MINE (1907)
North of County Rd. 424
Caspian

Gaastra
16.375040.5102225
Iron

The Fogarty Mine was opened in 1907 by the Verona Mining Company, and it produced nearly 1.4 million tons of high phosphorus hematite ore in 1907-1937. A large wood-framed rectangular building, 15 feet wide and 100 feet long, with a gabled roof, stands on the site, but is now covered with corrugated sheet metal siding. This was the dryhouse, where the miners showered after work. Nearby are the ruins of the enginehouse, a 25 foot square stone building.
[LS10, p. 147]

GENEVA MINE (1910)
South of Old County Rd.
Bessemer

Bessemer
15.722250.5149340
Gogebic

The Geneva Mine was opened in 1910 and shipped over 6 million tons of soft, non-Bessemer ore in 1910-1950. Three major surface buildings remain, all built in 1910. There is a two-story rectangular brick dryhouse, 20 feet wide and 160 feet long; a two-story powerhouse, 75 feet square, of concrete block construction; and a rectangular concrete block machine shop, 45 feet wide, 130 feet long, with a gabled roof.
[LS10, p. 55; Sawyer, p. 512]

Hiawatha Mine Shaft Number One Headframe (1904), Stambaugh

HIAWATHA MINE
SHAFT NUMBER ONE (c.1900)
Seldon Rd. (M-189)
Stambaugh

Iron River
16.372800.5103565
Iron

The Hiawatha Mine Shaft Number One was opened in 1893, developed by William Selden and Findley Morrison, and after working intermittently in 1893-1899, became one of the most productive iron mines in Iron County, shipping over 8.5 million tons of non-Bessemer hematite ore over its productive lifetime, 1893-1950. This mine eventually went to 2,100 feet, making it the deepest mine in Iron County as well. Along with the headframe (see other entry), several surface buildings stand at this site. They include a rectangular stone structure, 15 feet by 40 feet, with a gabled roof, and three rectangular frame buildings, all with gabled roofs and covered with corrugated sheet metal, two measuring 20 feet by 80 feet, while the third is 25 feet wide and 50 feet long.
[Sawyer, pp. 518, 524; LSIO, p. 116]

HIAWATHA MINE
SHAFT NUMBER ONE HEADFRAME (1904)
Seldon Rd. (M-189)
Stambaugh

Iron River
16.372800.5103565
Iron

This headframe (hoisthouse) was built in 1904 to replace the original wooden headframe. It is the oldest surviving headframe in Michigan. It is 50 feet by 30 feet at the base, with a stepped configuration which reduces the structure to 10 feet square at the top, approximately 120 feet high. The lower levels contain bins in which the ore was stored to be dumped into ore cars which were pulled under the bins. The steel framework is load-bearing, but much of the load was borne by a massive concrete foundation pier about 25 feet high located inside of the steel framework.
[Sawyer, pp. 518, 524; LSIO, p. 154; Jack Hill, A History of Iron County, Michigan (Iron River, Michigan, 1955), p. 69]

HOMER MINE (1914)
East of County Rd. 653
Iron River

Iron River
16.372000.5108000
Iron

The Homer Mine was opened in 1914 and shipped more than 6.7 million tons of ore between 1915 and 1950. This mine has been owned by the Buffalo Iron Mining Company, then the Hanna Iron Ore Company, and the Homer Ore Company. All that remains at this site are two rectangular brick buildings with gabled roofs, both measuring 40 feet by 100 feet. [LS10, p. 116]

JAMES MINE (1907)
Forbes Rd.
Mineral Hills

Iron River
16.373080.5107820
Iron

The Mineral Mining Company, established in 1903, opened the James Mine in 1906 and operated it until it was acquired by the James Mining Company in 1925. Over the period 1907-1950 this mine produced 7.7 million tons of high phosphorus limonite ore. The surviving surface buildings include a rectangular stone dryhouse, measuring 20 feet by 60 feet, with a hipped roof; a rectangular stone blacksmith shop with a gabled roof, 15 feet wide and 75 feet long; and a rectangular stone engine-house, 20 feet by 80 feet.
[Sawyer, p. 524; LS10, p. 117]

LAKE SHAFT MINE (c.1890)
Eureka St.
Ishpeming

Ishpeming
16.447520.5147530
Marquette

The Cleveland-Cliffs Iron Company Lake Shaft Mine was opened in 1888 on the original location of Lake Angeline, which had been drained. The mine was worked by the caving system to a depth of 555 feet and produced 16,232,784 tons of soft non-Bessemer hematite iron ore before it closed in 1927. Left at the site are three surface buildings: a dryhouse, 100 feet by 20 feet; a machine shop, 110 feet by 40 feet; and a third building, 100 feet by 20 feet, all of brick construction. [The Cleveland-Cliffs Iron Company: Its Development and Resources (Cleveland: Clayton Co., 1920); The Iron Ores of Lake Superior (Cleveland: Cromwell & Murray, 1911)]

MORO MINE (1890)
Seventh St. at Division St.
Ishpeming

Ishpeming
16.449400.5148480
Marquette

The Moro Mine was opened in 1890 and the next year was purchased by the Cleveland-Cliffs Iron Company. The Moro was worked by the open overhand stoping system and achieved a total production of 1,119,854 tons of Scotch ore, a hard non-Bessemer iron ore, before closing in 1919. The mine surface buildings still standing include the machine shop (100 feet by 60 feet), the warehouse and office (120 feet by 20 feet), the engine-house (60 feet by 60 feet), and a shop (20 feet by 40 feet), all constructed of stone with gabled roofs.
[H.A. Hall, "Map of Ishpeming" (1946); LSIO]

NEGAUNEE MINE (1909-1913)
East end of Lincoln St.
Negaunee

Negaunee
16.454460.5149750
Marquette

The Negaunee Mine was opened in 1887 by the Iron Cliffs Company, which merged with the Cleveland Iron Mining Company in 1891 to form the Cleveland-Cliffs Iron Company. A new shaft was sunk in 1909, and a complete set of new surface facilities were built in 1909-1913. The Negaunee Mine was worked by slice method to a depth of 1,317 feet. Before it was exhausted in 1949, it produced a total of 22,735,470 tons of soft, red, non-Bessemer iron ore. At the abandoned site still stands the enginehouse (60 feet by 110 feet), the dryhouse (18 feet by 120 feet), the blacksmith shop (18 feet by 100 feet), an office (40 feet by 20 feet with three gables), and a powerhouse (40 feet by 15 feet), all made of brick.
[LSIO; American Institute of Mining and Metallurgical Engineers, The Handbook of Mining in the Lake Superior Region (1920), p. 69]

NEWPORT MINE SHAFT "D" (1910,1931)
Bonnie Rd.
Irwin Township

Bessemer
15.721000.5148645
Gogebic

The Newport Mining Company operated this mine, discovered by John Burton of Milwaukee, from 1886 until 1923, when it was taken over by Youngstown Steel's Mines Corporation. Before it closed in 1963, this was one of the largest producers on the Gogebic Range. In 1910, it

had about 1,100 workers producing over one million tons per year, and over the longer period 1886-1950 it shipped over 32 million tons of soft, non-Bessemer ore. It was also one of the deepest iron mines in Michigan, with one shaft extending almost 3,300 feet below the surface. Three major surface buildings remain: a one-story rectangular brick dryhouse (1910), measuring 32 feet by 187 feet, with a gabled roof; a two-story rectangular wood-framed pattern shop (1910), with a gabled roof and a corrugated tin exterior, 45 feet wide and 160 feet long; and a two-story brick powerhouse, 55 feet wide and 162 feet long, constructed in 1931 by the Worden-Allen Company.
[LSIO, p. 57; Sawyer, p. 512; J.C. Sullivan, "Sinking a Mine Shaft Half a Mile Deep," PLSMI, XXX (September 1939), pp. 181-189; PLSMI, XV (1910), p. 18; "The Newport Mines," Transactions of the American Institute of Mining Engineers, XLII (1911), p. 680]

NORRIE MINE (c.1920)
Pine St.
Ironwood

Ironwood
15.717640.5147660
Gogebic

The Norrie Mine was opened by the Metropolitan Land and Iron Company in 1895 and shipped over 15,000 tons of ore during its first year of operation. It became one of the largest producers on the Gogebic Range and was the first mine in this area to produce over one million tons per year. It was acquired by the Oliver Iron Mining Company in 1897, was part of the Aurora-Norrie Group of mines in 1905-1935, and was then made a part of Republic Steel's Penokee Group of mines. All that remains at this site is a single building, a rectangular concrete block powerhouse, 25 feet wide and 75 feet long, with a gabled roof.
[LSIO, p. 57; Sawyer, pp. 507-508]

PABST MINE (c.1890)
West St.
Aurora

Ironwood
15.719960.5148420
Gogebic

This mine was discovered in 1885 by Captain Fred Pabst, the famous Milwaukee brewer. It shipped 2,347,000 tons in 1885-1901 and then was combined with the Norrie Group of mines and was operated by the Oliver Iron Mining Company until 1935, when it was acquired by the Repulic Steel Company and became part of their Penokee Group of mines. It

closed in the late 1950's. All that remains is a two-story rectangular brick powerhouse, with a gabled roof, 25 feet wide and 110 feet long. [LS10, p. 57; Sawyer, pp. 508, 512]

PLYMOUTH MINE (1915)
Plymouth Rd.
Wakefield

Wakefield
16.210490.5150525
Gogebic

The Plymouth Mine was an open-pit mine opened in 1915 by Coates and Tweed, operated by the Plymouth Mining Company in 1917-1950 and then by the Syracuse Mining Company until it was closed in 1952. This was the only open-pit mine on the Gogebic Range, and it produced 16,400,000 tons of soft, red, non-Bessemer ore between 1916 and 1950. At the west end of the pit, there is a two-story rectangular brick building, 60 feet wide and 160 feet long, which served as a machine shop, and four smaller brick buildings.
[LS10, p. 58]

SUNDAY LAKE MINE (c.1900)
Castille St.
Wakefield

Wakefield
16.275115.5152140
Gogebic

George Fay discovered iron ore near Wakefield in May 1882, and this ore body became the Sunday Lake Mine. It was operated by the Sunday Lake Mining Company over the period 1885-1900, and then by the Sunday Lake Iron Company until it was closed in the late 1950's. Over the period 1885-1950, it shipped 13,725,000 tons of ore, making it one of the largest producers on the Gogebic Range. Two surface buildings are extant: a wood-framed rectangular dryhouse, with a gabled roof and a corrugated tin exterior, 20 feet wide and 100 feet long; and a two-story brick powerhouse, with a gabled roof, measuring 40 feet wide and 120 feet long.
[LS10, p. 59; Sawyer, p. 512]

INTRODUCTION TO BULK PRODUCTS AND MANUFACTURING INDUSTRIES

Sites relating to bulk products and manufacturing industries are considered together in this section. Manufacturing, other than that directly related to the region's extractive industries, never played a significant role in the economy of the Upper Peninsula. Consequently, there are few sites relating exclusively to manufacturing industries. In fact, several bulk products industries significant in the Lower Peninsula, such as chemicals, food processing, and textiles, are barely represented in this inventory. To the extent that industry was important to the economic development of the Upper Peninsula, it consisted primarily of plants which processed the region's major natural resources--copper ore, iron ore, and timber. Three-quarters of the sites in this section relate to these three resources, accurately reflecting the bias in the region's economic history.

Shortly after the discovery and early exploitation of the region's copper deposits, mining companies began to construct processing plants. The first step in converting copper ores into marketable metal involved crushing the ore so that the copper could be mechanically separated from the surrounding rock formations. This was done by placing the ore on metal grates or screens and pounding or stamping the ore with a heavy weight. The first stamping mill in the district was a water-powered plant built on the Eagle River by the Lake Superior Copper Company in 1845, utilizing Cornish gravity stamps. As new mines opened in the late 1840's and 1850's, there was a concurrent growth in stamping mills. The mass or fissure mines of Keweenaw County built several new mills while the Quincy, Pewabic, and Franklin mines all built individual mills on Portage Lake in the 1850's. The steam-powered Ball Stamp gradually replaced the gravity stamp beginning in 1855, and by the 1870's it was the accepted technology in all of the major mills, with the lone exception of the Quincy Mining Company plant, which retained the gravity stamps until 1887.

There were two significant developments in stamping during the late nineteenth and early twentieth centuries--a geographical shift from Portage Lake to Torch Lake and a series of continuous improvements in the power and efficiency of the stamps. The opening of the Hecla Mining Company mill in 1868, followed by the Calumet mill in 1871, marked the beginning of a heavy concentration of stamping on Torch Lake. The other mines eventually building stamping mills in this area included the Osceola (1886, 1899), Tamarack (1887, 1896), Quincy (1887, 1900), and Ahmeek (1910). There were nineteen stamping mills in the entire Copper Country in 1907, with a total of one hundred stamps and a

combined daily capacity of 52,300 tons of ore. The four mills on Torch Lake had fifty stamps and nearly half of the total capacity. The other significant concentration of stamping mills was in the South Range, where there were six mills with a total of twenty-eight stamps and a daily capacity of approximately 16,000 tons. The development of more powerful and efficient stamping machines continued through the nineteenth century with the Ball Stamp (1855), the Leavitt Stamp (1880), and the Allis Stamp (1884), culminating with the development of the compound-expansion steam stamp by Bruno Nordberg in 1902. In recent decades the wrecking ball has been merciless, and there are virtually no significant structures extant from the stamping branch of the copper industry. Atop the remains of the Ahmeek Stamp Mill on Torch Lake stands a single Nordberg compound stamp, a lonely sentinel surveying the ruins of the immense mills which once dominated the landscape.

The stamp mills produced a copper concentrate which was then smelted in a furnace to yield the nearly pure copper ingots sold in national and world markets. Prior to the 1880's, most of the copper ore produced in the district was smelted at Detroit, Cleveland, and Pittsburgh, in plants operated by the Detroit and Lake Superior Copper Company, which also ran a smelter in Hancock. Beginning in the 1880's, however, the mining companies quickly moved into smelting, thus achieving economic integration of all operations from the mine to the final sale of the finished product. This development began in 1887, when the Calumet and Hecla Mining Company and the Detroit and Lake Superior Copper Company jointly built a smelter at Hubbell on Lake Linden, adjacent to the Calumet and Hecla stamping mills. Calumet and Hecla gained complete control of this plant in 1892. In rapid succession, the Tamarack-Osceola Manufacturing Company established a smelter, rolling mill, and wire mill at Dollar Bay in 1888-1889; the Quincy Mining Company built a smelter in Ripley in 1898; the Paine-Stanton group of mines (the Copper Range Company) established the Michigan Smelting Company in 1903 and constructed a large plant on Coles Creek, just west of Houghton; and the Bigelow group of mines gained control of the Lake Superior Smelting Company in 1904. There are partial remains extant from the Calumet and Hecla smelter and the Dollar Bay wire mill, and the Quincy Mining Company smelter complex (1898) is essentially intact.

The last major technological advance in the processing of copper was the development of methods for reclaiming the copper previously lost in the tailings (waste sands) from the stamp mills, notably those located on Torch Lake. The Calumet and Hecla Mining Company erected an immense

reclamation plant in 1913-1919 adjacent to their Torch Lake stamping plants, and the company recovered 423 million pounds of copper from their old tailings before this complex closed in 1952. A few of these buildings are extant, including the 1913 dredge which recovered the tailings. The last major reclamation plant, built in Mason in 1943 by the Quincy Mining Company, operated until 1967. The equipment, much of it dating from an earlier period, and the buildings, are essentially intact.

The experience of the iron mining industry was notably different from that of the copper industry. Because the Upper Peninsula has no significant coal deposits, virtually all of its iron ore has been smelted outside of the region. A relatively small and mostly unsuccessful charcoal iron industry did develop, however, in the second half of the nineteenth century. There was a total of twenty-nine blast furnaces constructed on twenty-five sites between 1858 and 1896, but most of these were short-lived and few significant remains are extant. The Jackson Iron Company furnace complex at Fayette is a significant exception. The charcoal iron industry produced about two million tons of pig iron during its entire history, with three ironworks accounting for more than half of the total. The blast furnaces may have consumed as much as six million tons of iron ore, less than one percent of the region's ore output. The charcoal iron industry nevertheless had a significant impact in the Upper Peninsula, particularly in a few individual districts, like Marquette County, where employment was considerable. The production of charcoal probably generated more employment than the furnaces proper, and the Inventory includes a reasonably representative sample of nineteenth century charcoal kilns, with nine sites containing a total of twenty kilns. It should be pointed out, however, that there may have been as many as two hundred charcoal kilns operating in the Upper Peninsula in the 1880's and 1890's.

The exploitation of the region's timber resources began in the early 1820's with the construction of sawmills in the eastern counties, but the major growth in lumbering began in the 1880's, centered around the Menominee, Manistique, and Escanaba River Valleys. Upper Peninsula forests yielded nearly twenty-five billion board-feet of pine between 1834 and 1897, with output falling off rapidly in the early twentieth century. Nearly half of the total came from the Menominee River Valley, and the City of Menominee was the most important lumbering center in Michigan in the 1880's and 1890's. The major sawmill towns such as Escanaba, Menominee, and Manistique made a transition to papermaking during the period 1890-1910, and they still contain important paper mills

today. At the peak of the lumbering era there were nearly one hundred major sawmills operating in the region, but virtually all of these have since disappeared, with fires taking a major toll. The Inventory includes the remains of only six lumbermills and three paper mills.

Finally, this section includes buildings and structures relating to a small number of other manufacturing operations, including the manufacture of such diverse products as mining machinery, sawmill equipment, wooden automobile bodies, wicker furniture, and telephone equipment. It also includes two breweries and a gristmill. The existence of diverse industries in the Upper Peninsula does not, however, alter the predominance of the copper, iron, and lumbering industries in the region's economic history.

Bay De Noc Company Wastewood Burner (1899), Nahma Township

ALBERTA SAWMILL (1934)
US-41
Alberta

Herman
16.386070.5166035
Baraga

The town of Alberta, with its steam-driven sawmill, was constructed in 1934 by Henry Ford as one of his numerous efforts to create experimental self-sustaining communities. The sawmill ran until 1954, after closing down during part of World War II. The village of Alberta was then donated to Michigan Technological University, which now utilizes the mill and village as a forest products research center. The original steam-powered equipment is no longer extant, but the sawmill, a rectangular building, 25 feet by 100 feet, with a gabled roof and a frame of local Norway pine, remains standing.
[Lewis, pp. 28-29]

BAY DE NOC COMPANY
WASTEWOOD BURNER (1899)
End of County Rd. 497
Nahma Township

Garden
16.526040.5075065
Delta

The Bay De Noc Company was established in 1881 by George Farnsworth and almost immediately built a sawmill in Nahma on the Lake Michigan coast. The sawmills built at this location have been destroyed by fires in 1889, 1899, and 1922. This wastewood burner, which is located on a small island and is equipped with mesh screening to prevent the escape of embers, was probably constructed after one of the major fires mentioned above, perhaps the one of 1899. It is a round brick tower sheathed in cast iron plates, 25 feet in diameter, resting on a stone foundation 6 feet high. Overall, it stands approximately 80 feet high, with a dome of wire mesh in a wire framework, topped off by a weather vane with the inscription, "B. De. N. Co."
[Sawyer, p. 378; Escanaba Daily Press, July 1, 1976, p. 5]

BAY FURNACE
STACK NUMBER ONE (1870)
County Rd. 2491
Christmas

Munising
16.522065.5143000
Alger

The Bay Furnace Company was incorporated in 1869 with a capital of $150,000 and immediately began erecting a charcoal blast furnace built of stone. It went into blast on March 5, 1870 and produced roughly

3,500 tons in 1870 and again in 1871. The company constructed an iron-shelled second stack as well, and this was put into operation in December of 1871. By 1875, the two furnaces were producing over 9,200 tons. Then on May 31, 1877, a teamster was bringing a load of hot charcoal through the town of Onota to the furnace and high winds began to ignite the charcoal and threaten nearby buildings. The teamster unhitched his frightened team so as not to endanger the horses, but in doing so, he insured a conflagration which destroyed both the town and the two furnaces. The ironworks stood idle for many years, and any hopes that it might be rebuilt were lost when the Iron River Furnace Company salvaged all the usable machinery including hot blast stoves and hoists in 1883 and moved the equipment to its furnace at Stambaugh. The square stone furnace is all that remains. It is 47 feet square at the base, 35 feet square at the top, and 45 feet high.
[Sawyer, p. 388; "Historical Highlights of Alger County" (Munising, 1975); Lafayette, pp. 15, 23, 31, 34; NR]

CALUMET AND HECLA MINING COMPANY
DREDGE (1913)
On Torch Lake
Quincy Mill

Laurium
16.389540.5222140
Houghton

This dredge was purchased by the Calumet and Hecla Mining Company in 1913 for use in their Lake Linden Reclamation Plant (see other entry), built in 1913-1919 to recover the tailings from their Lake Linden stamping plants, accumulated since 1866. In 1915-1951, it dredged 48 million tons of waste sands, which resulted in the recovery of 423 million pounds of copper. The Quincy Mining Company then purchased the dredge in 1951 for their Reclamation Plant (see other entry), and it remained in service until 1967. It was designed by the Bucyrus Company of Milwaukee, has a hull 56 feet wide and 110 feet long, and is equipped with a suction pipe 141 feet long, supported by a steel girder framework, giving it an effective dredging depth of 115 feet below water. The dredge pump had a 20 inch inlet and outlet, a 55 inch impeller which operated at 360 R.P.M., and was driven by a 1,250 horsepower electric motor. The dredge had a designed capacity of 10,000 tons of sand per day.
[Benedict, Milling, pp. 84, 86; C.H. Benedict, "Calumet and Hecla Reclamation Plant," PLSMI, XXIV (August 1925), pp. 72-78]

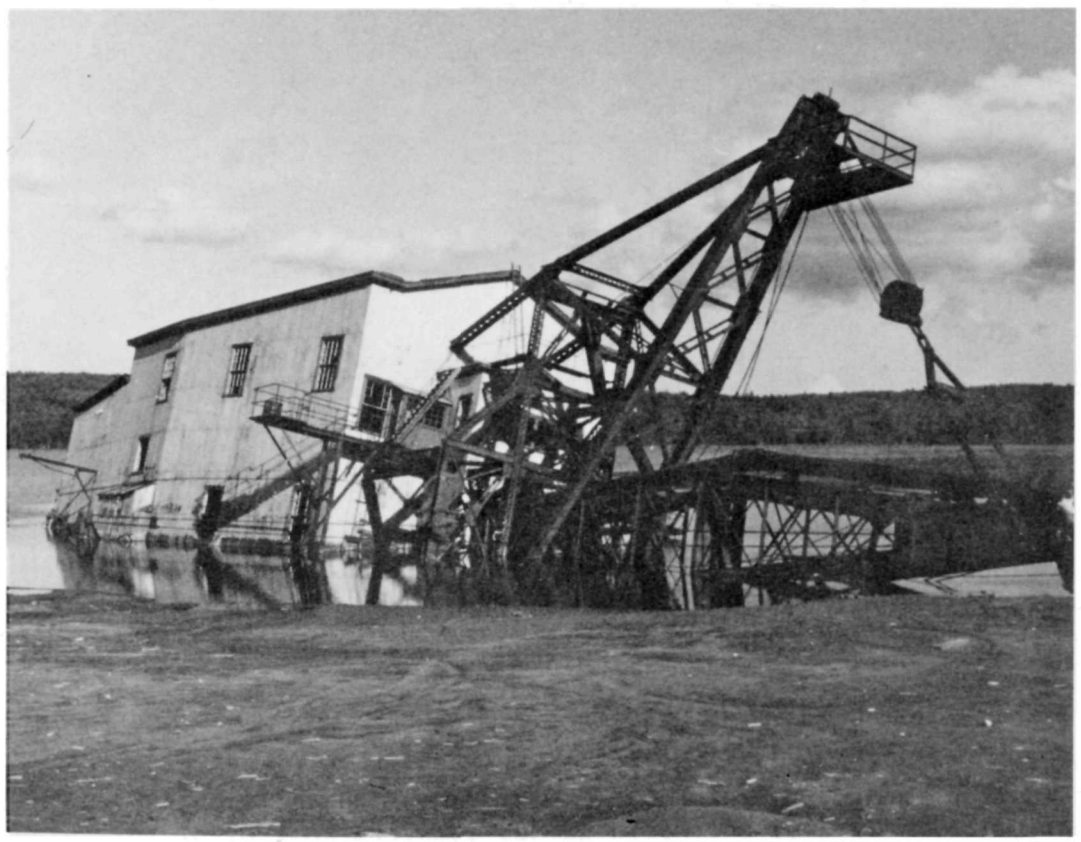
Bay Furnace Stack Number One (1870), Christmas

CALUMET AND HECLA MINING COMPANY
HUBBELL SMELTER (1886,1913)
East of M-26, on Torch Lake
Hubbell

Laurium
16.392180.5225580
Houghton

In 1886, the Calumet and Hecla Mining Company and the Detroit and Lake Superior Copper Company jointly constructed this smelter. The contractor was the firm of Hoar and Shelden of Houghton, and smelting began on June 1, 1887. Calumet and Hecla gained complete control of this plant in 1892. There are four interconnected buildings, all of cut coursed red sandstone construction with gabled roofs, probably dating from 1886. They include a blister furnace building, 50 feet by 70 feet; a storeroom,

16 feet by 64 feet; and two additional segments, 33 feet by 81 feet and 32 feet by 40 feet, the cooper's shop and carpenter shop respectively. In addition, there are two large buildings built much later: a two-story, steel-framed mineral house, 70 feet by 250 feet, and the electrolytic plant, a brick-walled and steel-framed rectangular building, with a roof with two clerestory levels, 155 feet wide and 270 feet long, completed in 1913. There is no equipment extant in any of these buildings. [Sawyer, p. 455; Stevens, XI (1912-1913), pp. 178, 204; Benedict, Red Metal, pp. 98-99; "Sketch," p. 18; Donald Chaput, Hubbell: A Copper Country Village (Lansing, 1969), p. 7]



Calumet and Hecla Mining Company Dredge (1913), Quincy Mill

CALUMET AND HECLA MINING COMPANY
RECLAMATION PLANT (1913-1919)
East of M-26, on Torch Lake
Lake Linden

Laurium
16.392900.5226540
Houghton

The Calumet and Hecla Mining Company operated stamping mills at Lake Linden since 1866, and by 1913 the waste sands or tailings from these plants, dumped into Torch Lake, covered an area of about 150 acres, to a depth of about 120 feet in some parts. The massive plant built here in 1913-1919 ran until 1952 and recovered a total of 423 million pounds of copper from 48 million tons of tailings. This mill complex originally included the Calumet and Hecla Stamping Mills (1907) and the Reclamation Plant buildings, including two regrinding plants, a flotation plant, and a leaching plant, along with more than a dozen ancillary buildings. Virtually all of this complex has been scrapped. The surviving structures include the electric power plant, a steel-framed building approximately 60 feet wide and 360 feet long; the laboratory, 35 feet square with a hipped roof; the fire hall, 30 feet by 90 feet, with a gabled roof; and the mill office, a three-story rectangular brick building which now serves as the Houghton County Historical Museum.
[Gates, p. 73; Benedict, Milling, pp. 82-89; C.H. Benedict, "Calumet and Hecla Reclamation Plant," PLSMI, XXIV (August 1925), pp. 68-88]

CARP RIVER IRON COMPANY
BARKVILLE KILNS (1879)
On Two Mile Hill
Bark River

Bark River
16.476014.5063000
Delta

The charcoal kilns at Barkville (now Bark River) were built by Hiram Burt of the Carp River Forge Company to help supply his newly-acquired Peat Furnace in Ishpeming. There were six kilns at this location, but only the ruins of three remain. They are conical stone structures, about 25 feet in diameter, and were probably about 20 feet tall. They are badly overgrown with trees and other vegetation and are located in an almost inaccessible, heavy-wooded, and insect-infested area.
[Bark River Centennial, 1871-1971, p. 25; Lafayette, p. 27]

CHAMPION BLAST FURNACE (1867,1873)
Main St.
Champion

Champion
16.426000.5151065
Marquette

The Morgan Iron Company built this charcoal blast furnace in 1867, and it was blown in on December 4th of that year. It was originally 20 feet square, with a 9 foot bosh, but was reconstructed in 1873, when the height was increased to 46 feet and a closed top was added. On April 9, 1874, there was a major fire at the Champion Ironworks destroying all of the buildings, but not harming the furnace itself. The Morgan Iron Company never put this furnace back into operation, although it had produced over 31,000 tons of high quality charcoal pig iron during its brief lifetime. The furnace suffered a direct hit by lightning in 1975, leaving only one wall of the structure intact.
[Lafayette, pp. 9, 22, 49]

CHATFIELD BRASS AND IRON WORKS (1910,1929)
718 Stephenson Ave.
Escanaba

Gladstone
16.494086.5066062
Delta

The Chatfield Brass and Iron Works originally consisted of two buildings, a one-story rectangular white brick machine shop, 75 feet wide and 150 feet long, and an adjacent foundry, originally wooden, measuring approximately 50 feet by 150 feet. The foundry was destroyed by fire in 1929 and replaced by a steel-framed concrete foundry building of similar dimensions. The white brick machine shop now has a stucco facing over the brick.
[Sawyer, p. 373; Escanaba Daily Press, October 3, 1929, p. 1]

CLEVELAND-CLIFFS IRON COMPANY
CHARCOAL PLANT (1905)
N. Lake Shore Drive
Kipling

Gladstone
16.499035.5079055
Delta

The Cleveland-Cliffs Iron Company built the Gladstone Pioneer Furnace in 1896, with an adjacent chemical plant producing charcoal for the furnace and wood alcohol as a byproduct. This furnace was located just north of the Gladstone city limits and was the last new furnace erected in the Upper Peninsula. The chemical plant was destroyed by fire in 1904, but was rebuilt and ran until 1922, when the furnace was permanently shut down. The furnace was dismantled and sold for scrap in

1933, but the two major reinforced concrete buildings housing the chemical plant remain. Both have cornerstones bearing the name of W.G. Mather, the President of the company. The smaller building is a single-story structure, 40 feet wide and 80 feet long, while the larger one is 40 feet wide and 140 feet long. Both have gabled roofs supported by massive timber Fink trusses. However, the roof on the smaller building has completely collapsed, and it is slated for demolition in the near future. The larger building is in excellent condition.
[Lafayette, pp. 38-39, 49]

Cleveland-Cliffs Iron Company Charcoal Plant (1905), Kipling

CLEVELAND-CLIFFS IRON COMPANY
PIONEER FURNACE NUMBER TWO (1903) — Marquette
Between Lake Shore Blvd. and Fourth St. — 16.469950.5156700
Marquette — Marquette

The Pioneer Furnace Number Two complex in Marquette is a descendant of the original Pioneer Furnace that operated in 1857-1893 in Negaunee. The Cleveland-Cliffs Iron Company acquired control of that furnace in 1890 and built another in Kipling in 1896 (see other entry). In 1900, the Marquette County Agricultural Society sold 119 acres of swampland to the company for $5,000, and that is where they built their Pioneer Furnace Number Two. The plant opened in 1903 with five buildings: a casthouse, stockhouse, enginehouse, boilerhouse, and a hoist enginehouse, all built of brick and steel with concrete foundations. The complex was constructed by the Philadelphia branch of the American Bridge Company at a cost of $1,000,000. There had been 93 charcoal kilns which were replaced in 1916 by steel ovens, and a modern refinery was built after an explosion in the first one in 1918. The complex produced charcoal and chemical byproducts from wood, as well as pig iron. The furnace went out of blast in 1933, and the entire operation closed down in 1965. Since then most of the over twenty-five buildings and miles of railroad track have been removed. Presently the only original buildings left are the casthouse, a brick barrelhouse used to store any cargo shipped in barrels, and a brick building used to granulate and size charcoal for steel treating.
[The Northeast Logger, Vol. 6, No. 8, February 1958, pp. 28-29; MCHS, No. 338]

COCHRANE ROLLER MILLS (1889) — Gladstone
Stephenson Ave. — 16.494035.5066018
Escanaba — Delta

W.F. Cochrane invented and patented a new system of teaming up to forty chilled cast rolls so that they could be driven by a single belt, an invention which proved extremely valuable to operators of grist and flour mills. In order to exploit his invention, he erected a complex including a foundry and machine shop at a cost of $175,000, but Cochrane died in a train wreck immediately before the plant was scheduled to open, and the venture was never a success. The machine shop, a rectangular one-story brick structure 60 feet wide and 175 feet long, remains, but it is surrounded by additions of a more recent vintage.
[Walter R. Nursey, The City of Escanaba, Michigan: The Iron Port of the World (Escanaba, 1890), pp. 75-76]

Escanaba Iron Company Kloman Kiln (c.1872), Wilson

ESCANABA IRON COMPANY
KLOMAN KILNS (c.1872)
Old US Rte. 2
Wilson

Bark River
16.469075.5061030
Delta

The Escanaba Iron Company was established in 1869 and built a charcoal blast furnace on Bay De Noc about one and one-half miles north of Escanaba. The furnace was put into blast in 1872, was shut down in 1874, and dismantled in 1879. There was a considerable number of charcoal kilns built to supply this furnace during its short lifetime. In May 1874, the company operated a total of 49 kilns located along the Chicago and Northwestern Railroad line between Escanaba and Powers.

At Kloman (now Wilson), they had ten kilns, each with a capacity of 50 cords of hardwood. Seven of these are still standing in various states of deterioration. They are stone conical structures, 20 feet in diameter and approximately 25 feet tall. All have three or four rows of vent holes cut into the bottom courses of stone, to facilitate the burning of the wood.
[Bark River Centennial, 1871-1971, p. 25; Lafayette, p. 19]

Ford Motor Company Kingsford Plant, Distillation Building (1923), Kingsford

FORD MOTOR COMPANY
KINGSFORD MANUFACTURING COMPLEX (1921-1925) — Iron Mountain
West of M-95 — 16.415710.5072220
Kingsford — Dickinson

Henry Ford, as part of his lifelong effort to manufacture automobiles with total independence from outside suppliers, purchased 350,000 acres of timberland in Dickinson County in 1920. Each Model T used about 250 board feet of lumber, and Ford proceeded to build a massive manufacturing complex at Kingsford, south of Iron Mountain, to become self-reliant in wood. Beginning in 1921, he built a sawmill, a battery of fifty-two dry kilns, a wood fabricating plant, a hydroelectric plant (see other entry), an immense power plant, and a chemical plant producing charcoal briquets, ethyl acetate, and methanol. By 1925 Ford had literally created a manufacturing complex out of wilderness, employing 7,600 workers. The sawmill and woodworking complex was temporarily closed in 1942, but then reopened to produce gliders for the war effort. Employment during the war was only about 3,500, with most of these working on gliders. With Henry Ford's retirement in 1945, the chemical plant was closed, but the wood manufacturing operation continued, with this plant producing wooden bodies for station wagons. The entire plant was closed down by Henry Ford II in 1951 and sold to the Kingsford Chemical Company, which ran it until 1961, when they too shut down this complex. Since then, most of the original buildings have been razed, including the powerhouse (except for the twin smokestacks 190 feet tall), sawmill, chemical plant, and distillation building. The remains include the twin powerhouse stacks, part of the distillation building, twenty of the original battery of fifty-two dry kilns, and three body plants, simply designated Body Plants Numbers One, Two, and Three. All three are approximately 100 feet wide and 300 feet long, of single-story construction. One is a wood-framed building, while the other two are steel-framed with immense glass exteriors.
[Lewis, pp. 16-17, 28-30; Iron Mountain News, July 1, 1976]

HEBARD AND THURBER COMPANY
SAWMILL (1878,1922) — Keweenaw Bay
On the Keweenaw Bay — 16.393000.5189045
Pequaming — Baraga

Charles and Edward Hebard and H.C. Thurber established the Hebard and Thurber Company in 1878, capitalized at $200,000 and proceeded to acquire timberlands and to construct a sawmill at Pequaming. The mill had 240

workers by the early 1890's and was producing 25 million board feet of lumber and about 25 million shingles annually at that time. As the timberlands became exhausted around 1910, the mill greatly reduced its production and employment. Then in September 1922, Henry Ford purchased the entire town of Pequaming, including the sawmill and 40,000 acres of hardwood. Ford revived the old mill and built a new powerhouse next to it. Rough lumber sawed at Pequaming was shipped to Ford's Kingsford plant (see other entry) for further processing and finishing. The plant was closed in 1942 because of wartime supply difficulties and the declining need for wood for automobiles, and the Ford Motor Company sold the entire property in 1952. The original sawmill, a rectangular four-story frame building with a sheet metal exterior, measuring 50 feet by 150 feet, as well as a one-story warehouse, 40 feet by 120 feet, both with gabled roofs, remain standing. Next to the sawmill is the 1922 brick powerhouse, 36 feet by 55 feet by 50 feet tall, with twin smokestacks.
[Lewis, p. 28; John Cummings, "The Timber Era," One Hundred Years of History: L'Anse, Skanee Centennial (Ishpeming, 1971), pp. 32, 35]

HOSKIN-MORAINVILLE PAPER COMPANY (1921)
144 First St.
Menominee

Marinette
16.453010.4993083
Menominee

The Hoskin-Morainville Paper Company, incorporated in February 1921, opened this plant in 1921. It was leased to the Marathon Company of Menasha, Wisconsin and then purchased outright by Marathon in 1954. The original buildings, plus numerous additions, have survived. The main manufacturing building is a rectangular brick structure, 80 feet wide and 400 feet long, with an attached powerhouse and a concrete smokestack 201 feet in height.
[Menominee Herald-Leader, May 5, 1922, p. 2]

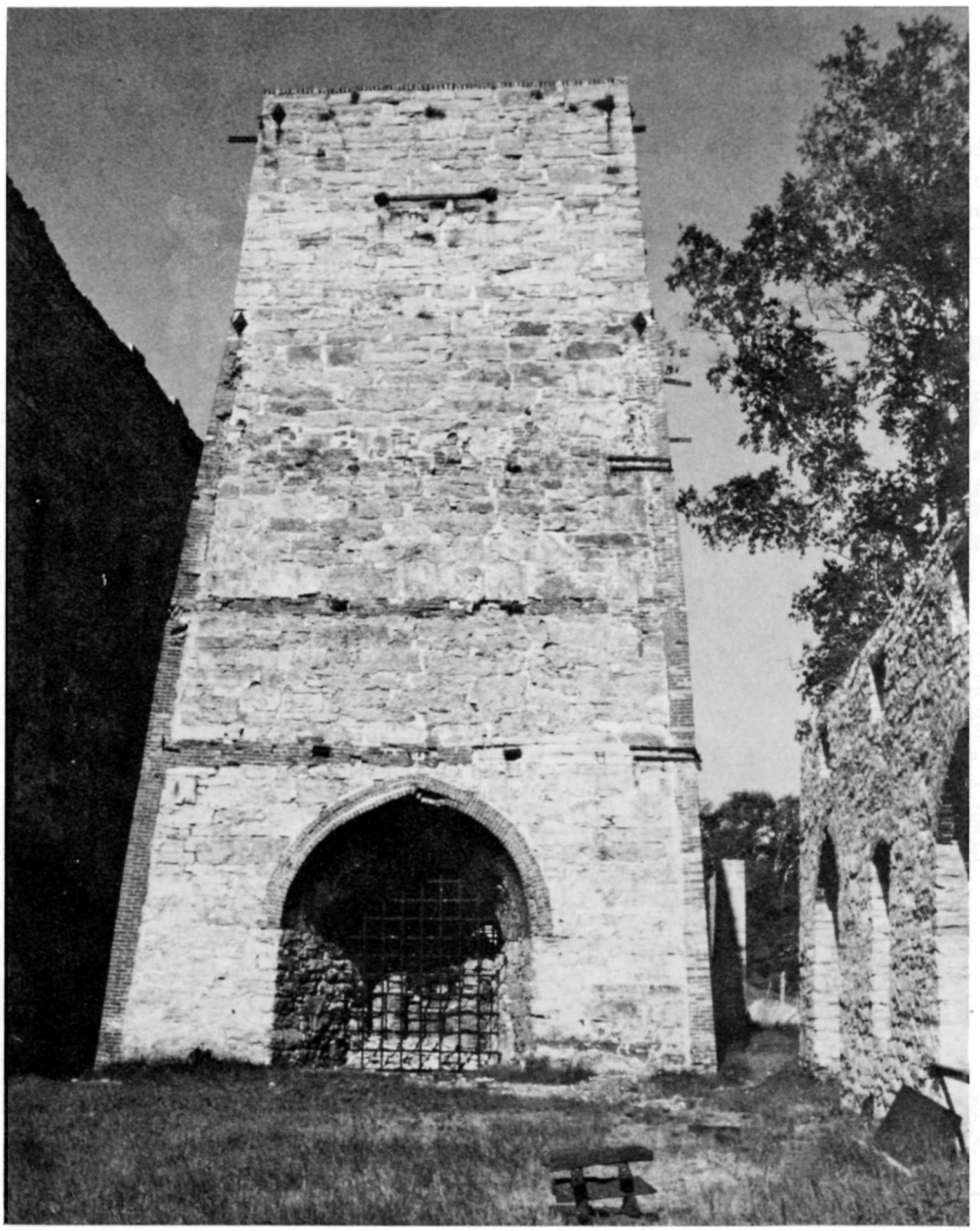
HUBBARD COMPANY
WASTEWOOD BURNER (1887)
End of Main St.
Rapid River

Rapid River
16.502075.5084065
Delta

The Hubbard Company erected a shingle and tie mill in Rapid River in 1887, and this mill has changed hands several times since, passing to the Madden Shingle Company and then to Store Anderson, whose descendants

still own the property. All that is left of the mill is this wastewood burner, a cylindrical brick structure sheathed in cast iron plates, resting on a stone foundation, measuring 25 feet in diameter and approximately 150 feet high. It is topped off by a conical wire mesh screen resting on a wire frame, built to prevent burning pieces of wood from escaping.
[Souvenir of Delta County, Michigan (Iron Mountain, no date), p. 12; Escanaba Daily Press, January 11, 1960]

Jackson Iron Company Limekiln (1867), Fayette Township



Jackson Iron Company Blast Furnace (1867), Fayette Township

JACKSON IRON COMPANY
FAYETTE IRONWORKS COMPLEX (1867-1886) — Fairport
County Rte. 483 — 16.525070.5062080
Fayette Township — Delta

The Jackson Iron Company was established in Jackson, Michigan in 1845 and began to work iron mines in Negaunee in Marquette County shortly after the company was formed. The ironworks complex located on the Garden Peninsula on Lake Michigan was begun in 1866 and was named after Fayette S. Brown, the company agent. The first charcoal blast furnace went into production on December 25, 1867, while a second furnace was built alongside it in 1870. The two furnaces were originally 42 feet high, but were raised to 53 feet in 1881. The two furnaces, producing charcoal hot-blast pig iron, were in operation steadily until 1884 and then ran only occasionally between 1885 and their permanent shut-down in 1890. Peak production was almost 17,000 tons in 1884, while total production between 1867 and 1890 was 229,000 tons. This site is a complex of both original and some restored structures. The furnaces are approximately 25 feet square at the base, 56 feet high, and have a nine and one-half foot bosh. Next to the furnaces there were originally eleven beehive charcoal furnaces, 14 feet in diameter and 18 feet high. None of these have survived, but a replica of one of them has been produced. Nearby stands the original limekiln, measuring 20 feet square at the base and 20 feet high. Surrounding the furnaces are the walls of the original casting rooms, each 25 feet by 70 feet, the hoistinghouse between the two furnaces, the buildings housing the boilers and blowing apparatus, and the hot blast stoves. This site also includes a stone and brick machine shop, a warehouse and company store, and numerous residences in this company-built town. The entire complex is now a state park.
[Lafayette, pp. 14, 32-33, 49; Marquette Mining Journal, November 15, 1963, pp. 1-3; NR]

JACKSON TYNDALL SAWMILL (c.1910) — Munising
Munising Ave. (M-28) — 16.525085.5140045
Munising — Alger

This was one of three major sawmills operating in Munising in the first two decades of the twentieth century. Henry Ford came to Munising in 1944 to view a 1,000 horsepower engine that the mill was trying to sell, and he decided to buy the mill as well. Ford rebuilt the mill and began

construction of a powerhouse, but wartime shortages caused delays, and he abandoned the project. Two large rectangular wooden buildings have survived, both two stories high, one 70 feet by 175 feet and the other 50 feet by 250 feet. There are also ruins of extensive wooden docks nearby.
[Lewis, p. 29]

LAKE SHORE ENGINE WORKS (1907)
Fair St. and Wright St.
Marquette

Marquette
16.474800.5155480
Marquette

The Lake Shore Engine Works was established by Charles T. Harvey in 1858. The company started this complex on a 12 acre plot in 1907, originally making mining machinery, including diamond drills and mine hoists. The buildings at this site include a machine shop, a grey iron and brass foundry, a plate shop, an engineering and office building, a steel fabricating shop, and a power plant, all of brick construction with concrete floors.
[Marquette Mining Journal, February 13, 1941; Lake Shore News, Vol. 5, No. 1, 1958]

LLOYD MANUFACTURING COMPANY (1908,1920,1923)
3010 Tenth St.
Menominee

Marinette
16.451090.4997000
Menominee

The inventor Marshall B. Lloyd moved from Minneapolis to Menominee in 1907 and quickly associated with Lewis Larsen to perfect two new inventions which are rather disparate. They invented an automatic loom to weave reeds for the manufacture of wicker furniture, baby carriages, and toys, as well as the Oxy-Acetylene method of producing thin-gauged steel tubing. The firm merged with the Heywood-Wakefield Company of Massachusetts in 1921. There are three main buildings in this firm's manufacturing complex: a two and three-story brick segment, 400 feet long and 160 feet wide, built in 1908; a four-story building (1920), 60 feet wide and 250 feet long; and a three-story reinforced concrete building (1923), 100 feet wide and 400 feet in length.
[Menominee Herald-Leader, November 13, 1922, p. 2; Sawyer, p. 588]

Marinette and Menominee Paper Company (1905), Menominee

MARINETTE AND MENOMINEE PAPER COMPANY (1905) — Marinette
Hattie St., at the Menominee River — 16.449090.4994080
Menominee — Menominee

The Marinette and Menominee Paper Company was established in the early 1890's and began operating a pulp mill on the Michigan side of the Menominee River and a paper mill on the Wisconsin side. The pulp mill in Michigan, built in 1891, was a series of wooden buildings which were replaced by the present brick building erected in 1905. The plant was owned and operated by the International Paper Company during the 1920's, shut down in 1931, and was then reopened in 1941 when the Scott Paper Company purchased the plant. The dam at this site (see other entry)

was originally constructed to provide power for the plant's pulp grinding operations, housed in a rectangular brick building, 30 feet by 120 feet, still extant. It originally had three pairs of 62 inch Samson turbines, no longer extant. Next to the grinder room stands the machine shop, 65 feet by 87 feet, the machine room, a two-story brick building 46 feet wide and 242 feet long, and a single-story finishing room, 46 feet by 81 feet. An additional two-story building serving as a wood room and wetmachine room is 50 feet wide and 102 feet long.

Menominee Electrical and Mechanical Company (1905), Menominee

MENOMINEE ELECTRICAL AND MECHANICAL COMPANY
[SIGNAL ELECTRIC] (1905)
1821 Thirteenth St.
Menominee

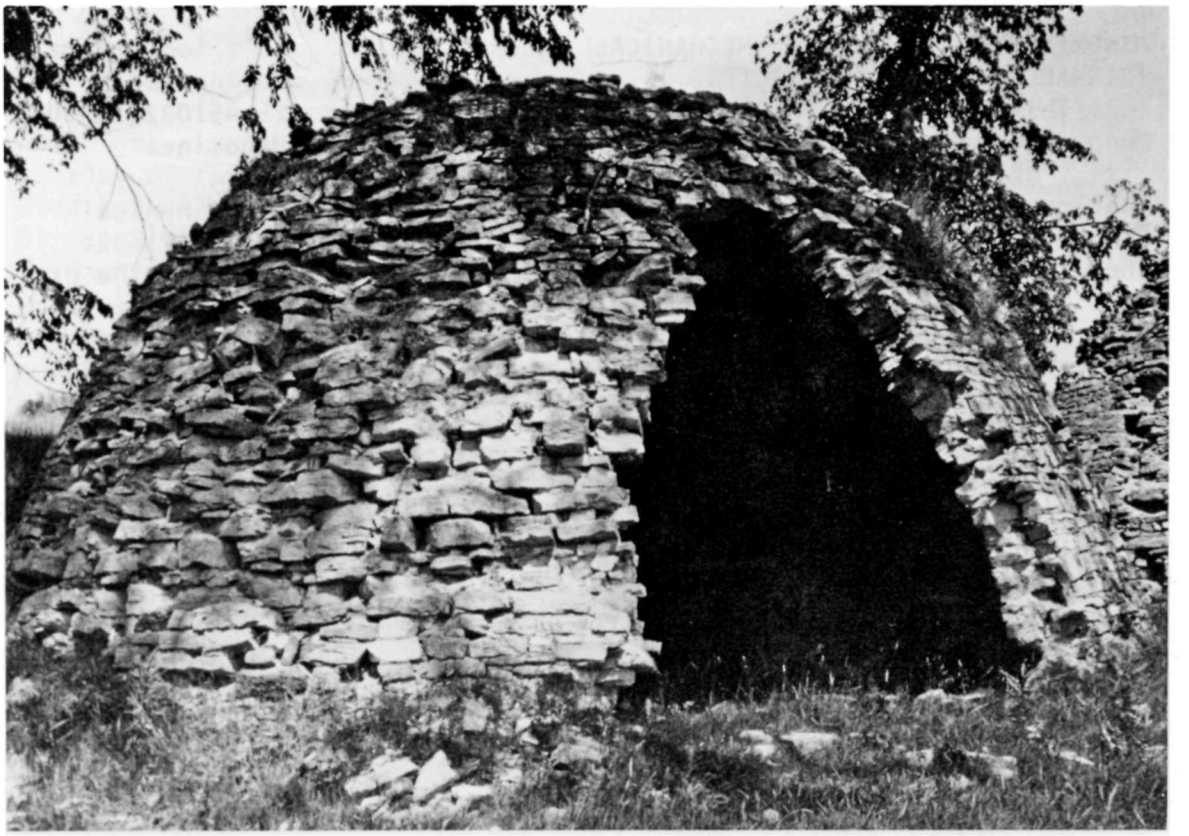
Marinette
16.451032.4995083
Menominee

Charles Hammond established the Menominee Electrical and Mechanical Company and operated a manufacturing plant on this site since 1892. The original wooden plant burned in 1904 and was replaced with the present building. Under H.G. Tideman, longtime general manager, this company produced a variety of electrical components for radios, telephones, and telegraphs. The owners boasted that the plant could produce 525 telephones per day in 1911. The plant was owned by the Signal Electric Manufacturing Company in 1919-1952, the King-Seeley Corporation in 1952-1964, and by the Vernco Corporation since then. The two-story brick buildings erected in 1905 have survived, with several more recent additions. The main portion is 62 feet wide and 320 feet long, with two wings, both 57 feet wide, measuring 176 feet and 209 feet in length.
[Menominee Herald-Leader, April 21, 1922, p. 2; Menominee Herald-Leader, June 1, 1964, p. 1; Sawyer, pp. 587-588]

MENOMINEE FURNACE COMPANY
STEPHENSON KILNS (1875)
County Rte. 352, east of US-41
Stephenson

Stephenson
16.455024.5028023
Menominee

The Menominee Furnace Company erected a charcoal blast furnace just north of Menominee in 1872 and had hoped to supply its charcoal needs from the wastewood produced at the sawmills located in the city. When this supply proved insufficient, the company erected a battery of charcoal kilns in Stephenson, about twenty miles to the north, on the Chicago and Northwestern Railroad line. The Menominee Furnace operated from 1872 until 1883, when it was permanently shut down. There are five kilns standing at this site, plus the ruins of a sixth. These stone kilns are conical in form, measuring 25 feet in diameter and 20 feet high. They are in remarkably good condition considering the length of time they have been exposed to the elements.
[Sawyer, p. 580; Lafayette, pp. 20, 49]



Menominee Furnace Company Stephenson Kiln (1875), Stephenson

MUNISING PAPER COMPANY (1904)
601 E. Munising Ave.
Munising

Munising
16.527030.5139030
Alger

This plant was constructed by the Munising Paper Company in 1902-1904 and consisted of a sulphite fiber mill, paper mill, and powerhouse. In 1911, it was producing about 70 tons per day and employed 200 men. The plant was later purchased by Kimberly-Clark in 1952. Most of the original plant and equipment remains, but is well hidden by more recent additions and the extensive use of sheet metal siding to improve insulation. The main buildings are of standard mill construction of the period, three and four-story brick buildings 75 feet to 100 feet wide

and 150 feet to 200 feet long. The complex includes separate buildings housing the beater room, machine room, and finishing room, the original brick powerhouse, hidden from view by a concrete powerhouse built in the 1930's, and the digester building, a massive brick structure approximately six stories high.
[Sawyer, p. 391]

NORDBERG COMPOUND STAMP (1910) — Laurium
East of M-26, on Torch Lake — 16.391240.5224640
Tamarack City — Houghton

This steam-powered stamping machine, used to crush the copper-bearing ores to enable the extraction of the metal, was one of four similar stamps installed by the Ahmeek Mining Company in their new stamping mill erected in 1910. Invented by Bruno V. Nordberg of the Nordberg Company of Milwaukee, this compound-expansion steam stamping machine was an important improvement in the technology of copper ore processing in the early part of the century. It continued a trend towards more powerful and efficient stamping machines that had begun with the Ball Stamp (1855), the Leavitt Stamp (1880), and the Allis Stamp (1884). This compound stamp used the steam twice, in a 15 and one-half inch high-pressure cylinder and then in a 32 inch low-pressure cylinder, mounted below the high-pressure one. The Nordberg compound stamp, with 7,800 pounds of moving parts, brought an efficiency improvement of twenty percent over the simple expansion stamps.
[Benedict, Milling, pp. 43-45, 52, 55-62; Weed, pp. 18-19]

PEMBERTHY COOK AND COMPANY WAREHOUSE (1897) — Marinette
145 First St. — 16.452087.4994000
Menominee — Menominee

In 1891 Joseph Somerville, Frank Pemberthy, and Charles I. Cook formed the firm of Somerville, Pemberthy, and Cook to engage in the wholesale food trade in Menominee, mainly to supply the company stores operated by the numerous logging and sawmill firms in the Menominee area. The firm became the Pemberthy Cook and Company in 1892, and then the Carpenter Cook Company in 1901 when Pemberthy died. This four-story brick warehouse, resting on a stone foundation, measuring 120 feet by 152 feet, was built in 1897. It features 15 inch square columns,

steel horizontal floor beams, and windows equipped with steel shutters as insurance against the fires that periodically swept through this lumber town.
[Sawyer, pp. 585-586; Menominee Herald-Leader, April 16, 1941, pp. 1-4]

Pemberthy Cook and Company Warehouse (1897), Menominee

PENINSULAR IRON COMPANY
CARP RIVER KILN (c.1890)
US-41, south of the Carp River
Marquette

Marquette
16.470580.5151400
Marquette

John Burt began building the Carp River Furnace at the mouth of the Carp River in 1872, and his Carp River Iron Company merged with the

Peninsular Iron Company in early 1874. The furnace operated sporadically between 1874 and 1882, when it shut down after a major fire. It was idle until Noah Gray and Charles Schaffer, the Alger County "charcoal king", gained controlling interest in the furnace in 1889, rebuilt it, and returned it to production for a brief stint in 1891. It remained out of blast until 1899, but then ran regularly until 1907, when it was permanently shut down. The surviving charcoal kiln was probably built around 1890, when Schaffer signed a contract with the State of Michigan to remove 1,000 cord of hardwood for charcoal-making from the newly-opened Marquette State Prison property. There were 36 kilns at this site, all of similar size and design. The lone survivor is a sandstone, beehive-shaped structure, 25 feet in diameter at the base, tapering to a height of 20 feet at the cap of the dome.
[Lafayette, pp. 20, 28, 34-35]

PENINSULAR IRON COMPANY
MANGUM KILN (c.1878) — Gwinn
Greenfield Rd. at Mangum Rd. — 16.480080.5144080
Mangum — Marquette

John Burt built a furnace at the mouth of the Carp River, south of Marquette, in 1872 and then established the Carp River Iron Company in 1873. It became the Peninsular Iron Company in 1874 and operated this furnace sporadically in 1872-1884. It was reported that in 1878 there were sixteen charcoal kilns operating in an area south of Harvey, all supplying the Carp River Furnace. This kiln was probably one of these sixteen. It is 20 feet in diameter at the base and 20 feet high, of rough coursed stone construction, built against a hill, with two openings arched with stone, each five feet high. One opening is at ground level, while the second is located on the side abutting the hill and is at the top of the kiln.
[Lafayette, pp. 19-20, 49]

PICKFORD ELEVATOR (c.1920) — Pickford
Pleasant St. — 16.703825.5114855
Pickford — Chippewa

The Pickford Elevator and Feed Mill was built around 1920 by Fred J. Smith, who also owned a nearby flour mill, no longer extant. It is a three-story frame building, 40 feet wide and 70 feet long, resting on

a stone foundation, with a gambrel roof. The only historic equipment extant is a grain cleaner manufactured by the A.T. Ferrelli Company, patented in 1924. The building is still in use as an elevator. [A History of Pickford Pioneer Families, Third Edition (Pickford, 1972), pp. 108-109]

Peninsular Iron Company Mangum Kiln (c.1878), Mangum

PRESCOTT COMPANY (1899)
1720 Fifteenth St.
Menominee

Marinette
16.451033.4995067
Menominee

D. Clint Prescott began manufacturing sawmill machinery in Marinette in 1867 and operated several machine shops there until he moved to Menominee

in 1899. This large firm, valued at $450,000 in 1911, was a major producer of sawmill machinery and is credited with introducing the modern bandsaw. This large manufacturing complex includes more than a dozen buildings, the largest of which are the foundry, a rectangular brick and steel building 120 feet wide and 500 feet long, and a building used as a machine shop and erecting floor, a single-story wood-framed structure 100 feet wide and approximately 800 feet long.
[Menominee Herald-Leader, November 13, 1922, p. 2; Sawyer, p. 587]

QUINCY MINING COMPANY
RECLAMATION PLANT (1943)
East of M-26
Mason

Laurium
16.388940.5221580
Houghton

This plant was constructed in 1943 to recover copper from the waste sands deposited in Torch Lake from the Quincy Mining Company's stamp mills. The Metal Reserves Company of the War Production Board granted a loan of $1.2 million for this plant, which was built for $1.243 million. The Quincy Mining Company became sole owner in 1947, after repaying this loan, and operated the plant until May 1967. In its first decade of operation, the plant recovered 53 million pounds of copper from 10.5 million tons of sand. The main building, a rectangular steel-framed structure, 124 feet by 255 feet, with a clerestory, was equipped with six Harding ball mills, for regrinding the sands, Wilfley Tables, and flotation machines. Five of the ball mills are still in place. The waste sands were first dredged and brought to the shore plant, equipped with a stationary dredging pump, from which they moved on a belt conveyor to the nearby Main Building. The shore plant, measuring 60 feet by 80 feet overall, along with the elevated wooden conveyor housing, are extant.
[Benedict, Milling, pp. 90-95; C. Harry Benedict, "Reclaiming Quincy Tailings from Torch Lake," Engineering and Mining Journal, CXXXXV (April 1944), pp. 74-78]

QUINCY MINING COMPANY
RIPLEY SMELTER (1898-1910)
Royce Rd.
Ripley

Chassell
16.382840.4219840
Houghton

The Quincy Mining Company smelter at Ripley was planned by James Cooper and blown on December 1, 1898. It smelted copper ores until 1967, when

the company's Reclamation Plant (see other entry) closed, but then remelted scrap copper until 1971. The original installation included four reverberatory furnaces, each with a hearth of 12 feet by 18 feet, which treated 18 tons of a mixture of mass, mineral, and black copper (with a content of 70-80 percent copper) per 24 hours, yielding 13 tons of refined metal. The process included 16 hours of fusion and removal of slag, followed by fining or rabbling (2 hours), refining or poling (2 hours), and then casting the molten metal (2 hours). The slag produced in this process was then treated in a blast furnace and included in a future reverberatory furnace charge. The blast furnace charge consisted of 20 tons of slag, 8 tons of limestone, and 4 tons of coal. The cupola or blast furnace building (1898) is constructed of cut coursed red sandstone, 30 feet by 100 feet, with an ell measuring 40 feet by 50 feet. The furnace building, a red sandstone structure, 84 feet by 144 feet, with a steel-framed addition made in 1904, housed a 60 ton reverberatory furnace, along with a 120 ton reverberatory furnace which was installed in 1910, at which time an automatic casting machine was added as well. The furnaces and casting machine are extant. In addition, there is a mineral warehouse (1904), also built of sandstone, 40 feet wide and 95 feet long, reached by a trestle 460 feet in length. Other buildings at this site include three large rectangular frame warehouses, all with gabled roofs; a concrete block briquetting plant (1906); three small warehouses; and other miscellaneous buildings including a powerhouse, castinghouse, carpenter shop, machine shop, and laboratory.
[Stevens, I (1900), p. 226; Stevens, III (1903), p. 464; Stevens, V (1905), pp. 678-679; Stevens, VIII (1908), p. 1,156; Stevens, XI (1912-1913), pp. 736-737; Rickard, pp. 142-146; Houghton Gazette, May 27, 1967]

RICHTER BREWING COMPANY
[DELTA BUILDING] (1900)
1615 Ludington Ave.
Escanaba

Escanaba
16.494050.5065083
Delta

The Richter Brewing Company constructed this building when the company was organized by John Richter in 1900. The original equipment included an ammonia-type refrigeration system and an artesian well, and the plant had a capacity of about 30,000 barrels per year. The beers produced here included brand names such as Richter's Select and Richter's Special Brew. After some efforts to make soft drinks in the 1920's, the building

was sold to the Delta Brewing Company in 1933. Delta sold beer under the labels Peninsula Pride, Buckingham Ale, and Arctic Club, but finally closed all brewing operations in the early 1940's. The four-story brick brewhouse 80 feet wide and 150 feet long is extant, but none of the original equipment has survived.
[Sawyer, p. 373; Iron Port, February 16, 1901]

Quincy Mining Company Smelter, Cupola Building (1898), Ripley

Soo Brewing Company (1901), Sault Ste. Marie

SOO BREWING COMPANY (1901)
949 E. Portage Ave.
Sault Ste. Marie

Sault Ste. Marie
16.705790.5151935
Chippewa

The Vilter Manufacturing Company of Milwaukee erected this brewhouse in 1901 for the Soo Brewing Company. After producing carbonated soft drinks during Prohibition, the plant was used to produce "Soo Brew" in 1937-1941, but this beer was not very popular, so the plant was permanently closed. It is now used as a freight depot by a trucking firm. This four-story rectangular brick building rests on a stone foundation and measures 75 feet by 105 feet. It features two towers with the inscription, "Brew House" and "Stock House."
[Sault Ste. Marie City Directory, 1900-1942, passim.]

TAMARACK-OSCEOLA COPPER MANUFACTURING COMPANY
WIRE MILL (1888, c.1920)
South end of Fourth St.
Dollar Bay

Point Mills
16.386260.5218780
Houghton

The Tamarack-Osceola Copper Manufacturing Company was established in 1888 by the two mining companies of the same names, both properties controlled by Albert S. Bigelow. The company built a rolling and wire mill on Dollar Bay in 1888 and later built a smelter nearby. The buildings which have survived, all from the wire mill, include a rectangular rough rubble masonry structure 50 feet wide and 200 feet long, with an ell measuring 45 feet by 60 feet, both with gabled roofs; a smaller building, 50 feet by 60 feet, of similar construction; a 50 foot square brick building, with a gabled roof; and a concrete building resting on a brick foundation, with a gabled roof, measuring 50 feet by 220 feet. The first three buildings were probably erected when the plant was built in 1888, while the last is of much later vintage, perhaps built around 1920.
[Stevens, I (1900), p. 189; Gates, p. 73; Engineering and Mining Journal, August 4, 1888, p. 89]

TRAP ROCK VALLEY [MICHAELSON'S]
GRISTMILL (c.1900)
West of Trap Rock Rd.
Trap Rock

Laurium
16.395860.5232660
Houghton

This gristmill was built around 1900 by Emil Michaelson, who was producing 25 barrels of flour per day in 1918. Beginning in 1944, Wiljo

Wiljoinen operated the mill until it ceased operation in 1973. It originally was driven by a two cylinder Eagle gasoline engine with eight inch pistons, no longer extant. It is a simple two-story frame building, approximately 20 feet by 40 feet, with a gabled roof. Equipment still intact includes a line shaft from which belts extended to the machinery, storage bins, the conveyor system, and a grain sifter.
[Clarence J. Monette, The History of Lake Linden, Michigan (1975), pp. 2-4]

White Marble Lime Company Kilns (1889), Gulliver

UNION FUEL COMPANY
KILN (1881)
County Rd. G-2
Onota Township

Au Train
16.500050.5146045
Alger

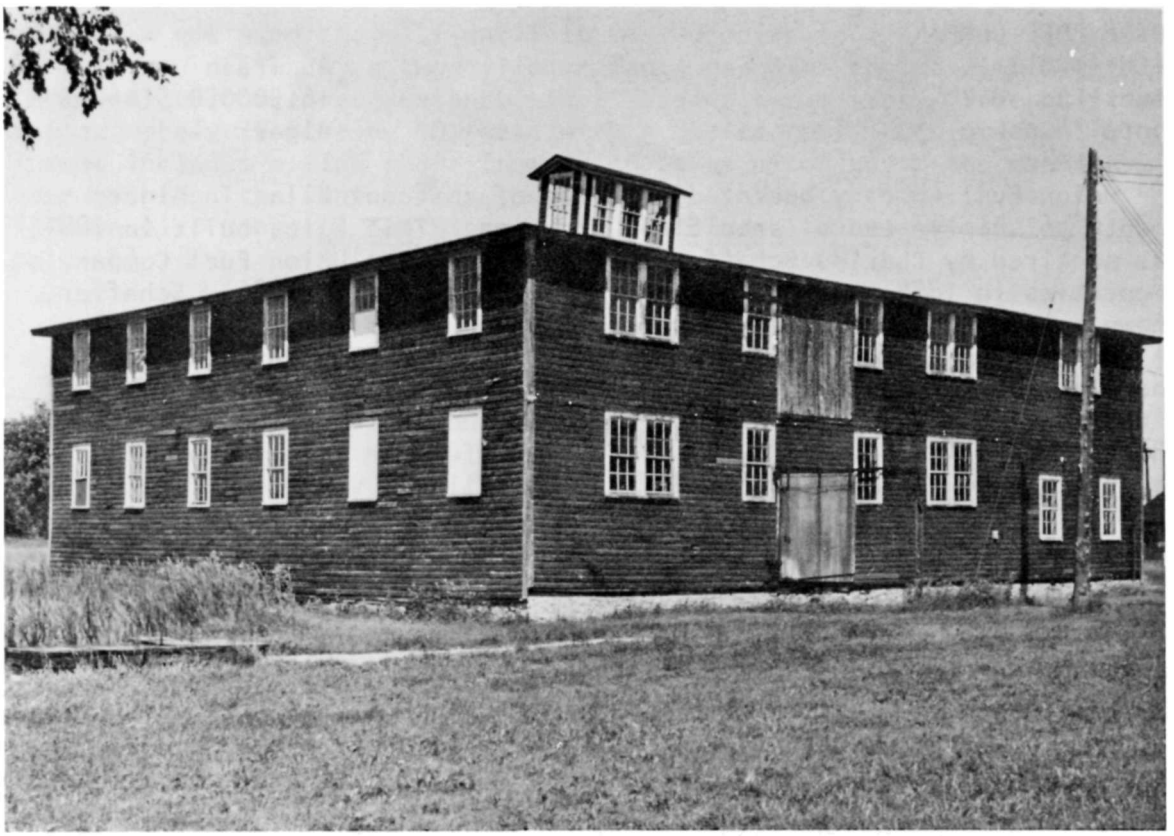
The Union Fuel Company operated a series of charcoal kilns in Alger County to supply several area blast furnaces. This kiln, built in 1881, was acquired by Charles Schaffer when he leased the Union Fuel Company's properties in 1884 and then purchased them outright in 1886. Schaffer, known as the "charcoal king" entered into a partnership with J.W. Belknap in 1890, and they operated forty kilns in Alger County alone. There is one kiln at this site, the ruins of a second, and the walls of a rectangular stone building, 15 feet wide and 25 feet long, nearby. The structure which is still standing is 25 feet in diameter at the base and approximately 25 feet in height, built of stone, and conical in form.
["Historical Highlights of Alger County" (Munising, 1975); Lafayette, p. 34]

WHITE MARBLE LIME COMPANY
KILNS (1889)
Duck Inn Rd.
Gulliver

Not Available

Schoolcraft

The White Marble Lime Company was established in 1889 by George Nicholson, Jr. to produce quicklime, utilizing dolomite and waste wood produced by the extensive lumber industry located in the Manistique area. The company was reorganized as the Manistique Lime and Stone Company in 1925 and continued production until 1929. There are two stone kilns still standing, each 20 feet square at the base and 40 feet high. West of the kilns, there are the remains of ten stone piers, each 5 feet long, and spaced 12 feet apart. The piers probably supported an elevated ramp, 140 feet long, leading from a nearby hill to the throats of the two kilns.
[Sawyer, p. 352]



Wisconsin Land and Lumber Company IXL Plant (1889), Hermansville

WISCONSIN LAND AND LUMBER COMPANY
IXL PLANT (1889)
Main St.
Hermansville

Powers
16.452030.5061050
Menominee

C.L.J. Meyer, who operated a sash, door, and blind factory in Fond du Lac, Wisconsin, established the Wisconsin Land and Lumber Company which bought 50,000 acres of pine forest, mostly in Menominee County, in 1878. He established the company town of Hermansville in that year and began construction of a sawmill, initially to supply his Fond du Lac plant. Anticipating the eventual depletion of his softwood holdings, Meyer then constructed a hardwood sawmill in 1882. At this time, factory-

produced hardwood flooring was full of defects which had to be cut out by the consumer before the flooring could be laid. Meyer developed new sawing and planing machinery which enabled him to cut hardrock maple into standard, clear, undefective sheets and this new product was called IXL Maple Flooring. He built a new plant to produce this flooring in 1885-1889, simply calling it the "IXL Plant". While the product was ultimately successful, Meyer was financially embarrassed in 1889 and forced to assign the assets of the Wisconsin Land and Lumber Company to his son-in-law, Dr. George Washington Earle, who, along with his descendants, ran the mill successfully until the early 1930's. During the most prosperous years between 1910 and 1930, this plant shipped ten railroad cars of finished products per day. Virtually all of the original plant, consisting of massive wood-framed buildings, is extant. There are three rectangular buildings, all three-story, all 90 feet wide, measuring 120 feet, 140 feet, and 250 feet long; a barn, 40 feet by 100 feet; a two-story frame office building, 60 feet square; a kiln dryer, 25 feet by 60 feet; and several additional smaller buildings.
[Menominee County: A Glimpse Backward (Menominee County Historical Society), p. 6; Sawyer, pp. 606-608]

INTRODUCTION TO UTILITIES

This section includes structures and systems used to manufacture, store, or distribute water, sewage, steam, gas, electricity, and compressed air. There are several excellent examples of early small-town waterworks at Negaunee (1882), Menominee (1884), Calumet (1889, 1899), and Marquette (1890). Water towers are in the Specialized Structures section of the volume. There are also two significant hydraulic air compressor plants built by mining companies at Quinnesec Falls (1883) and Victoria (1906). Virtually none of the original machinery in these facilities has survived. More than three-quarters of the sites, however, are from the electrical utility industry, with a predominance of hydroelectric plants.

The development of electrical power in the Upper Peninsula was closely linked to the major extractive industries such as copper, iron, and lumber. There is a total of twenty-seven hydroelectric plants recorded, and half of these were constructed by mining or paper companies. Of the remaining fourteen plants, municipalities built six and streetcar companies three. The bulk of these plants were not built to serve a general market for electricity, but were designed for specific consumers like mines, mills, and streetcar lines. It is not surprising that there was little speculative investment in generating plants, given the small scattered population of the Upper Peninsula in the late nineteenth and early twentieth centuries.

The hydroelectric plants range in age from the Marquette City Plant (1890) to the facilities at Victoria and Prickett Lake, both completed in 1931. There is a total of six built prior to 1910, eleven constructed during the next decade, and eight completed in the 1920's. The small size of most of the region's rivers, with the exception of the Menominee, Escanaba, and St. Mary's, operating in conjunction with low demand levels, helped produce relatively small-scale plants, with a typical capacity of 4,000-6,000 KW. The Michigan Lake Superior Power Company (36,000 KW) and the Victoria Plant (15,000 KW) are the exceptions.

The massive hydroelectric plant of the Michigan Lake Superior Power Company at Sault Ste. Marie is the most significant site in this section in terms of its age, size, extant equipment, and engineering design. It was the longest hydroelectric plant in the world and the second largest in the United States in terms of capacity when it opened in 1902. The headgates and power canal bringing water to the powerhouse are treated as separate sites in this section. One engineering design feature which distinguishes the hydroelectric plants of this region

from those of the Lower Peninsula is the extensive use of long penstocks fitted with surge tanks to increase the effective operating head, an important design variation to compensate for the small flow of its rivers. This design results in an effective head of 608 feet at the Carp River Plant (1912), 424 feet at the McClure Plant (1919), and 215 feet at Victoria.

AU TRAIN FALLS HYDROELECTRIC PLANT (1910)
At Au Train Falls
Forest Lake

Au Train
16.511045.5131050
Alger

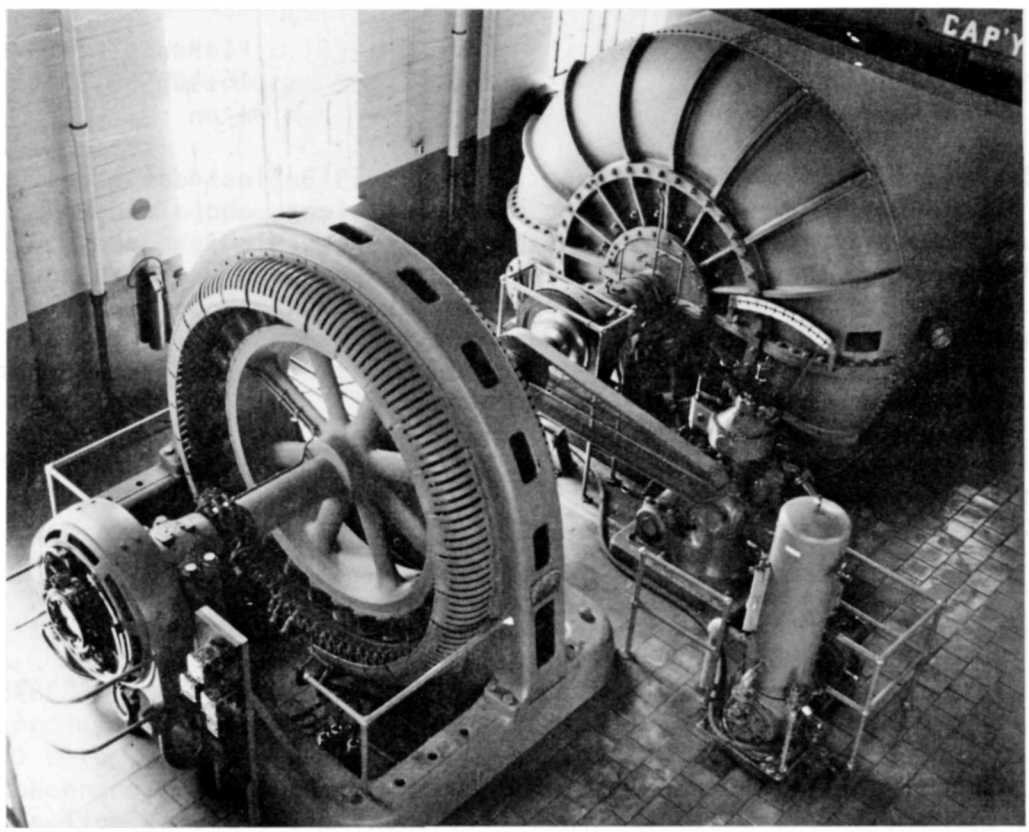
This was the first hydroelectric plant built by the Cleveland-Cliffs Iron Company to supply the electrical power needs of its mines. In 1922 the Cliffs Electric Company was established as a public utility, and it operated this plant until 1934 when it merged with Cliffs Power and Light Company. Then in 1953, Cliffs Power and Light sold its transmission facilities to the Upper Peninsula Power Company, while the generating facilities reverted to the Cleveland-Cliffs Iron Company, which still operates them today. This plant consists of a concrete dam 90 feet long and approximately 60 feet high, with ten steel vertical gates, each 9 feet wide. This plant utilizes a hydraulic head of 137 feet, largely because the powerhouse is located about one-half mile downstream from the dam. The rectangular brick powerhouse, 32 feet by 37 feet, contains two 560 KW generators, 2,300 Volts, operating at 600 R.P.M. Water reaches the turbines through a penstock which is 66 inches in diameter and 2,628 feet long overall. There are two distinct sections of penstock, one of wood, 1,375 feet long and a second of steel construction 1,253 feet long.
[Cliffs News, April 1963, pp. 12-13; CP & LC]

BIG QUINNESEC FALLS
HYDROELECTRIC PLANT (1914)
At Big Quinnesec Falls
Quinnesec

Iron Mountain
16.419085.5070845
Dickinson

Big Quinnesec Falls had been harnessed to produce compressed air by the Hydraulic Company in 1883 (see other entry), but this was the first hydroelectric plant at this site. It was built in 1914 by the Peninsula Power Company after its Twin Falls plant was opened. It was acquired by the newly-formed Wisconsin Michigan Power Company in 1927. The original concrete dam at this site was 56 feet high and created a head of 61 feet. However, in 1949 a new dam 75 feet in height was built slightly downstream to serve a new powerhouse, and the old dam was completely submerged as a result. The only portions remaining are the intake canal and headworks leading into the old powerhouse. The 1914 powerhouse, with its original equipment, is extant. The two-story powerhouse, 54 feet by 60 feet, housed the generators on the lower level and the transformers on the upper level. The equipment includes two vertical Francis

turbines manufactured by Allis-Chalmers, and two General Electric generators, each 2,205 KW, 2,300 Volts, operating at 257 R.P.M. ["Preliminary Report on the Old Quinnesec Falls Plant of the Oliver Mining Company" (1933), pp. 1-3; WMPC, p. 36]



Big Quinnesec Falls Hydroelectric Plant (1914), Quinnesec

BONEY FALLS HYDROELECTRIC PLANT (1919)
On the Escanaba River
Cornell Township

Schaffer
16.479015.5091073
Delta

The fourth dam built on the Escanaba River by the Escanaba Power Company was completed in 1919 at Boney Falls. It includes a brick powerhouse,

measuring 30 feet by 70 feet by 50 feet high, equipped with three generators with a total capacity of 4,400 KVA. There are six steel tainter gates adjacent to the powerhouse, each gate 20 feet wide, and a concrete spillway section of the dam 200 feet long. The Boney Falls Dam develops a head of 50 feet.

BRULE HYDROELECTRIC PLANT (1919)
On the Menominee River
Crystal Falls Township

Florence East
16.405550.5088750
Iron

The Brule Hydroelectric Plant, constructed in 1919, includes a dam which is 571 feet long overall, creates a head of 63 feet, and a pond of 774 acres. Proceeding from the Wisconsin shore to the Michigan shore of the Brule River, there is an earth-filled segment with a concrete core wall, the rectangular concrete powerhouse, measuring 48 feet by 73 feet, a closed concrete dam segment, and a concrete segment equipped with steel radial gates. The original powerhouse installation, still extant, consists of three Francis vertical turbines built by the Leffel Company and three generators, two rated at 2,500 KW, the third at 1,660 KW. All three generators produce 6,600 Volts at 240 R.P.M. and were manufactured by Westinghouse.
[WMPC, p. 17]

CALUMET AND HECLA MINING COMPANY
LAKE SUPERIOR WATERWORKS (1889)
Waterworks Rd.
Calumet Township

Muggin Creek
16.384540.5236760
Houghton

The Lake Superior Waterworks was built in 1889 by the Calumet and Hecla Mining Company to supply their mines in the Calumet area, as well as the residential needs of the population of Calumet, most of which were working for the company and living in company-owned housing. The waterworks was designed by Erasmus Leavitt and had a capacity of four million gallons per day, double the capacity actually utilized. There was an 18 inch intake pipe extending 1,200 feet into Lake Superior and a 12 inch pipe four and one-half miles long leading from the pumps to the mine. The plant was originally steam-powered, but was electrified in 1908. Two rectangular wood-framed buildings remain, both with gabled roofs and both now covered with corrugated sheet metal exteriors,

measuring 40 feet by 100 feet and 30 feet by 60 feet. They served as the pumphouse and boilerhouse, respectively. The original pumps are no longer extant.
[Sawyer, p. 543; Smithsonian Institution, "Index to the Leavitt Collection of Engineering Drawings"; Benedict, Red Metal, p. 89]

CALUMET WATERWORKS (c.1899)
North end of Waterworks St.
Calumet

Ahmeek
16.390540.5234080
Houghton

Erasmus Leavitt designed the Calumet Waterworks in 1881 for the Calumet and Hecla Mining Company. A new boilerhouse was constructed there in 1899, and only this later building has survived. It is a two-story rectangular brick building with a gabled roof, 40 feet wide and 75 feet long. It is now used for the storage of antique car parts.
[Smithsonian Institution, "Index to the Leavitt Collection of Engineering Drawings"]

CARP RIVER HYDROELECTRIC PLANT (1912)
On the Carp River
Marquette

Marquette
16.470040.5150720
Marquette

This hydroelectric plant, completed in 1912, was the second generating facility built by the Cleveland-Cliffs Iron Company. The powerhouse is a brick building with a concrete floor and measures 87 feet long, 47 feet wide, and 45 feet high. It has a total rated capacity of 5,600 KVA produced by two Allis-Chalmers horizontal generators operating at 2,300 Volts, 3 phase, 60 cycle, 702 Amps, 720 R.P.M. The maximum head of water provided by the plant is 608 feet obtained by a 21,930 foot long penstock with a 200 foot tall surge tower connected to a storage dam. The penstock consists of a wooden segment 5 feet in diameter and 10,000 feet long, and a steel segment 66 inches in diameter and 11,270 feet long.
[CP & LC; Cliff News, April 1963, pp. 12-13; Marquette Mining Journal, February 3, 1967]

CHALK HILL HYDROELECTRIC PLANT (1927)
On Menominee River
Holmes Township

Pembine
16.437035.5040017
Menominee

The Chalk Hill Hydroelectric Plant was constructed in 1927, and then sold in 1937 by the Northern Electric Company to the Wisconsin Michigan Power Company, the present owners. The brick powerhouse, measuring 36 feet by 133 feet, features ornamental stonework and stained glass windows. The original equipment, still intact, consists of three S. Morgan Smith, Francis vertical turbines driving three Allis-Chalmers generators, each with a rated capacity of 3,250 KW, 2,300 Volts, operating at 150 R.P.M. Six pivot leaf headgates control the flow of water to the turbines. The earth gravity dam, which creates a head of 28 feet and a pond of 882 acres, is 1,936 feet in length and includes a concrete spillway segment with eleven steel radial gates.
[WMPC, p. 26; Iron Mountain News, July 1, 1976, p. 17]

ESCANABA HYDROELECTRIC PLANT (1929)
Middle branch of the Escanaba River
Gwinn

Ishpeming
16.461033.5129020
Marquette

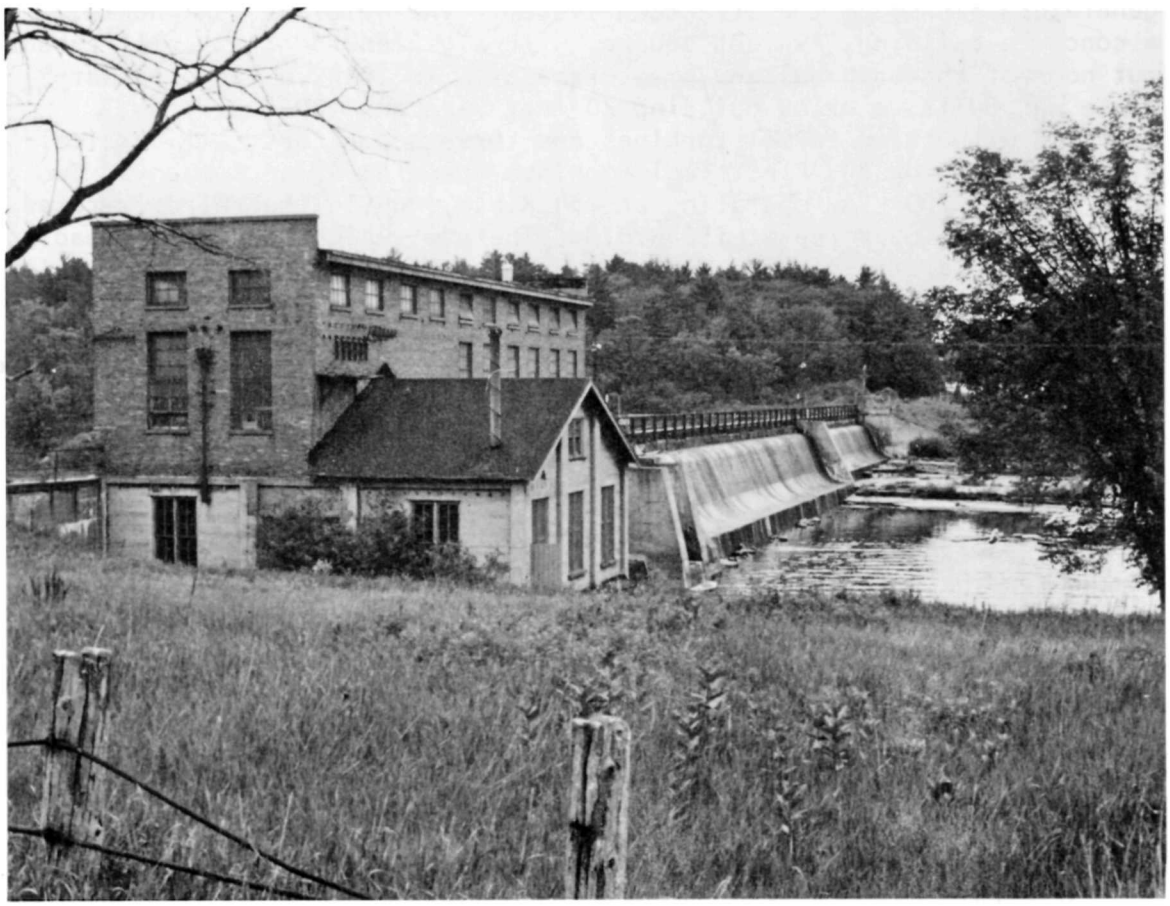
This small hydroelectric plant on the Escanaba River consists of a brick powerhouse, 39 feet wide and 57 feet long, housing a single generator rated at 2,500 KW, 2,300 Volts, operating at 257 R.P.M. The concrete dam, approximately 250 feet long, is located more than one-half mile from the powerhouse. Water reaches the powerhouse through a penstock which is 8 feet in diameter and 3,050 feet long, giving the plant an operating head of 67.5 feet. The penstock is composed of two distinct segments, a tunnel cut through stone measuring 1,700 feet in length, and a riveted steel tube segment, 1,350 feet long.
[Cliffs News, April 1963, p. 12; CP & LC]

ESCANABA POWER COMPANY (1892)
120 N. Eighth St.
Escanaba

Escanaba
16.495047.5065070
Delta

The Escanaba Power Company was established in 1892 to provide electricity, mostly for lighting, to the Escanaba area. The company merged with the Escanaba Street Railway Company in 1909 to form the Escanaba Traction Company, later the Escanaba Power Company. This building

housed the company's original generating plant, powered by steam engines, but none of the original equipment is extant. It is an ell-shaped two-story brick building, with the portion facing the street measuring 45 feet by 75 feet, with a wing (now used as a garage) measuring 25 feet by 35 feet.
[Sawyer, p. 367]



Escanaba Power Company Dam Number One (1907,1923), Escanaba

ESCANABA POWER COMPANY
DAM NUMBER ONE (1907,1923)
On the Escanaba River
Escanaba

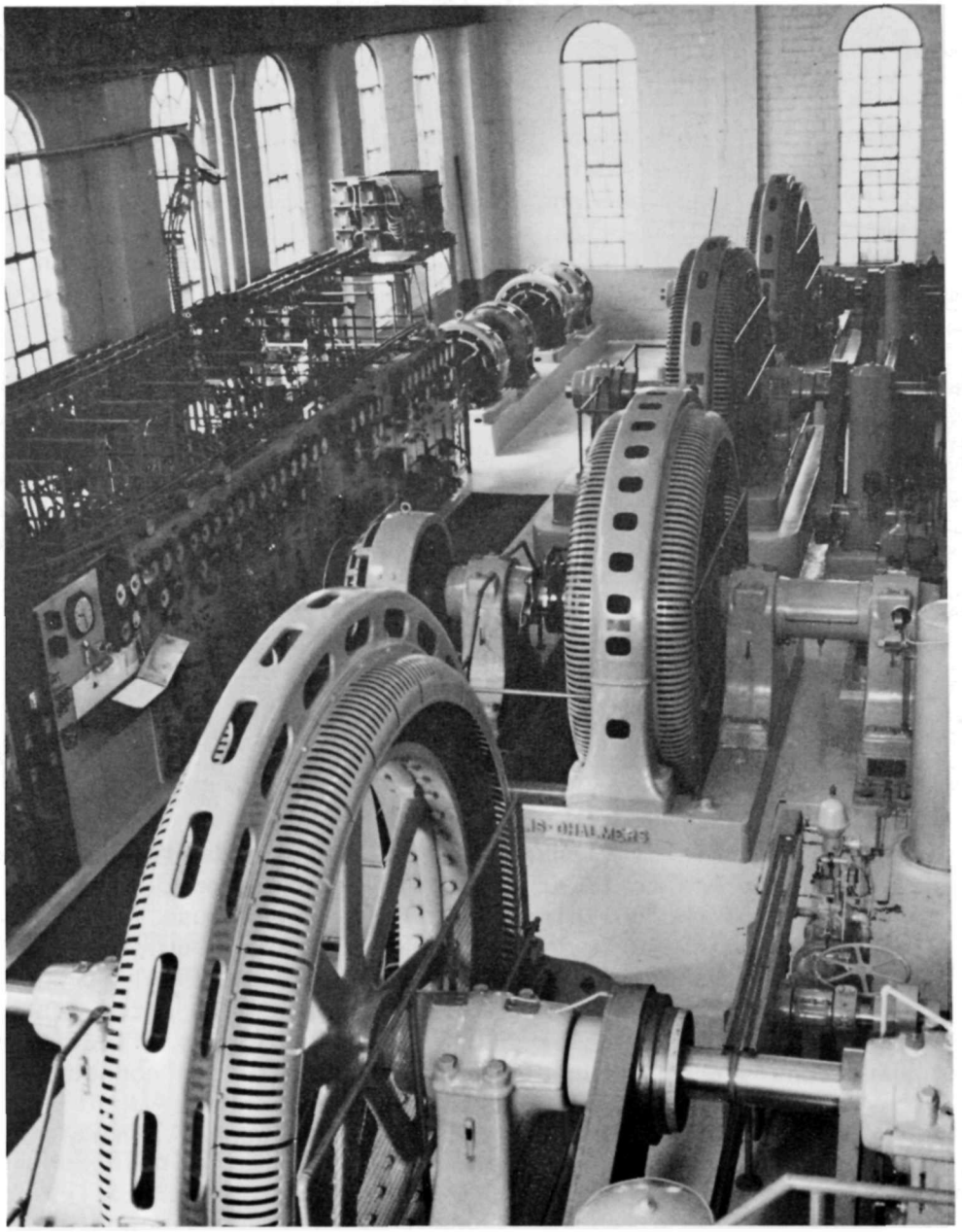
Gladstone
16.493086.5071017
Delta

The Escanaba Street Railway Company was established in 1891 and initially ran a power plant on Ludington Street in the city. The Escanaba Power Company, founded in 1892, merged with the Street Railway Company to form the Escanaba Traction Company in 1909. This dam and hydroelectric plant were built at a cost of $200,000 and were initially equipped with D.C. generators linked to the streetcar system. The original powerhouse, a concrete building, 25 feet square, with a gabled roof, is still extant, but none of the original equipment remains. In 1923, a larger powerhouse was built, a brick building 20 feet wide and 100 feet long, equipped with three Leffel turbines and three generators, all vertical-type, produced by the Electrical Machinery Manufacturing Company. Two are rated at 700 KVA, operating at 164 R.P.M., while the third is rated at 550 KVA and operates at 150 R.P.M. The dam, which produces a head of 25 feet, is a reinforced concrete design, 24 feet high, 24 feet thick at the base, and 600 feet long. The original dam is nearly all extant, except for a steel radial gate forty feet from the powerhouse. This was probably installed in 1923 for better control over water flow because the remainder of the dam is a simple spillway, with flashboards. [Sawyer, p. 367; Clint Dunathan, The Century Book: Escanaba 1863-1963 (Escanaba, 1963), pp. 236-237]

ESCANABA POWER COMPANY
DAM NUMBER THREE (1915)
On the Escanaba River
Cornell Township

Gladstone
16.492078.5075035
Delta

This is the third dam constructed on the Escanaba River by the Escanaba Power Company and its predecessors. It includes a concrete powerhouse, 40 feet by 80 feet, with two Allis-Chalmers generators, each rated at 1,200 KVA and operated at 120 R.P.M. The reinforced concrete dam, which develops a head of 31 feet, is 195 feet long and consists of three steel radial gates, each 15 feet wide, and a concrete spillway segment, 150 feet long.



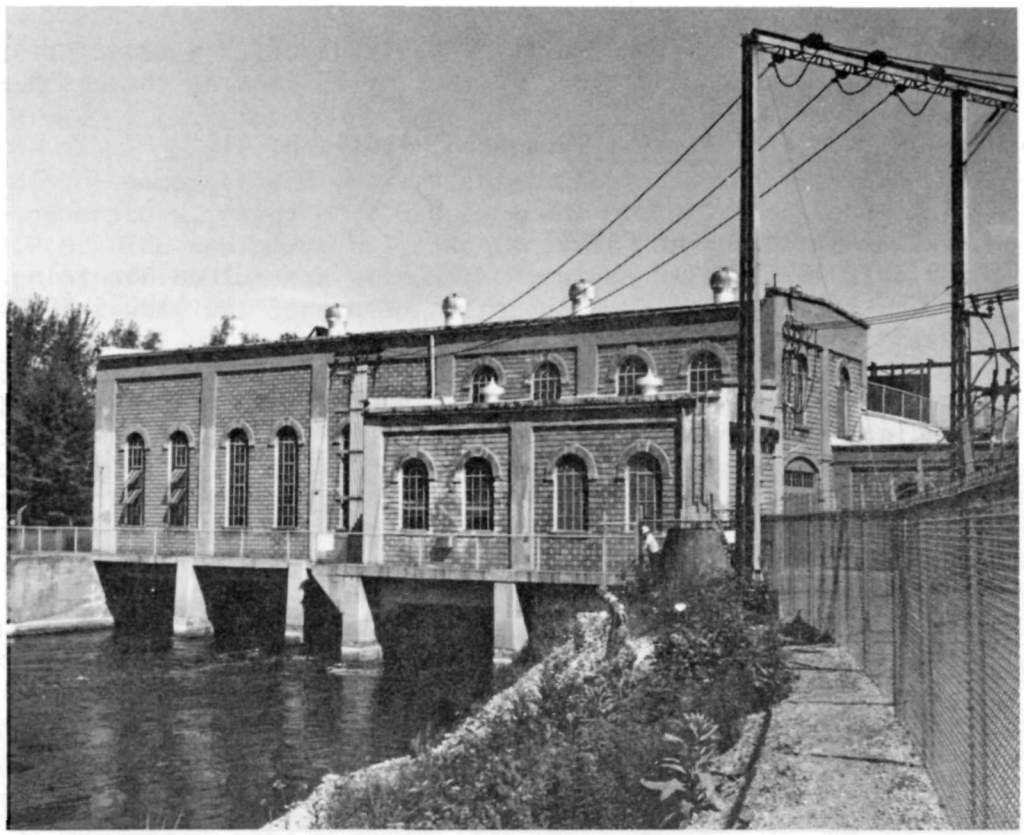
Grand Rapids Hydroelectric Plant (1908), Holmes

GRAND RAPIDS HYDROELECTRIC PLANT (1908) — Stephenson
On the Menominee River — 16.449020.5022035
Holmes — Menominee

In 1903, two similar companies providing electric service and streetcars in the twin cities of Marinette, Wisconsin and Menominee, Michigan merged to form the Menominee and Marinette Light and Traction Company, with a capital of $560,000, later enlarged to $1 million in 1909. This hydroelectric plant at the Grand Rapids was designed by Jacobson and De Guere, architects, while T.R. Hasley served as the superintendent of construction. The rectangular powerhouse, 25 feet wide and 120 feet long, is a concrete and steel building with brick walls. The dam created by the powerhouse, plus a larger dam located about one-quarter of a mile upstream, creates a head of 29 feet. The upstream dam, of concrete construction, is about 300 feet long, with a 100 foot spillway portion and 15 steel radial gates, each 12 feet wide. The equipment in the powerhouse includes two 100 KW D.C. generators and five larger generators ranging in capacity from 1,100 KW to 1,800 KW, with a combined capacity of 6,900 KW, manufactured by Westinghouse, General Electric, and Allis-Chalmers.
[Sawyer, p. 589]

HOIST HYDROELECTRIC PLANT (1916,1925,1941) — Negaunee
County Rte. 510, at the Dead River — 16.456420.5156560
Negaunee Township — Marquette

The Hoist Hydroelectric station received its name from the steam hoist that the men had to use to lower materials and equipment down a steep slope to the site of the building. The brick powerhouse is 107 feet long, 25 feet wide, and 30 feet high. The surviving equipment includes a 1916 Westinghouse generator rated at 1,250 KW, a 1925 Allis-Chalmers unit rated at 2,500 KW, and a 1941 Allis-Chalmers unit rated at 1,750 KW. The penstock, which enables this plant to enjoy an effective head of 130 feet, consists of a tunnel segment 400 feet long connected to a steel tube 383 feet long and 7 feet in diameter.
[CP & LC; Cliffs News, April 1963, pp. 12-13; Marquette Mining Journal, February 3, 1967]



Grand Rapids Hydroelectric Plant (1908), Holmes

HOUGHTON COUNTY ELECTRIC COMPANY (c.1902)
Memorial Ave. and Bridge St.
Houghton

Chassell
16.380580.5219720
Houghton

The Houghton County Electric Light Company was formed in 1902 when the older Peninsula Light and Power Company (established in 1884) enlarged its generating capacity in order to serve the needs of the recently-formed Houghton County Traction Company (see other entry). This power-house, built at the turn of the century, was later acquired by the Upper Peninsula Power Company in 1947 and remained in service until 1959. None of the generating equipment remains. The building has coursed

finished Jacobsville sandstone walls, a gabled roof, and measures 45 feet by 75 feet, with an addition, 20 feet by 25 feet at the east end of the building.
[Houghton, Michigan: 1861-1961 (Houghton, 1961), p. 41]

HYDRAULIC COMPANY QUINNESEC FALLS COMPRESSOR BUILDING (1883)
At Big Quinnesec Falls
Quinnesec

Iron Mountain
16.419085.5070845
Dickinson

Two major Iron Mountain mining companies, the Oliver Iron Mining Company and the Ludington Company, formed the Hydraulic Company to utilize the water power at Big Quinnesec Falls to produce compressed air for their underground mine operations. This part of the Menominee River is still known as "Hydraulic Falls" by local residents. This plant was built in 1883 at a cost of $400,000 and transmitted compressed air along a line 3 and one-half miles long and 5 feet in diameter. The original turbines, compressors, and the transmission line have been scrapped and the intake and outflow areas around the building have been filled in. The compressor building itself has survived, a one-story rectangular stone building, 60 feet wide and 146 feet long, with a gabled roof, steel roof trussing, and no interior columns.
["Preliminary Report on the Old Quinnesec Falls Plant of the Oliver Mining Company" (1933), pp. 1-3; Walter Nursey, The Menominee Iron Range (Milwaukee, 1891), p. 104; American Institute of Mining and Metallurgical Engineers, Handbook of Mining in the Lake Superior Region (1920), p. 84]

IRON MOUNTAIN FILTRATION PLANT (1924)
N. Stephenson St.
Iron Mountain

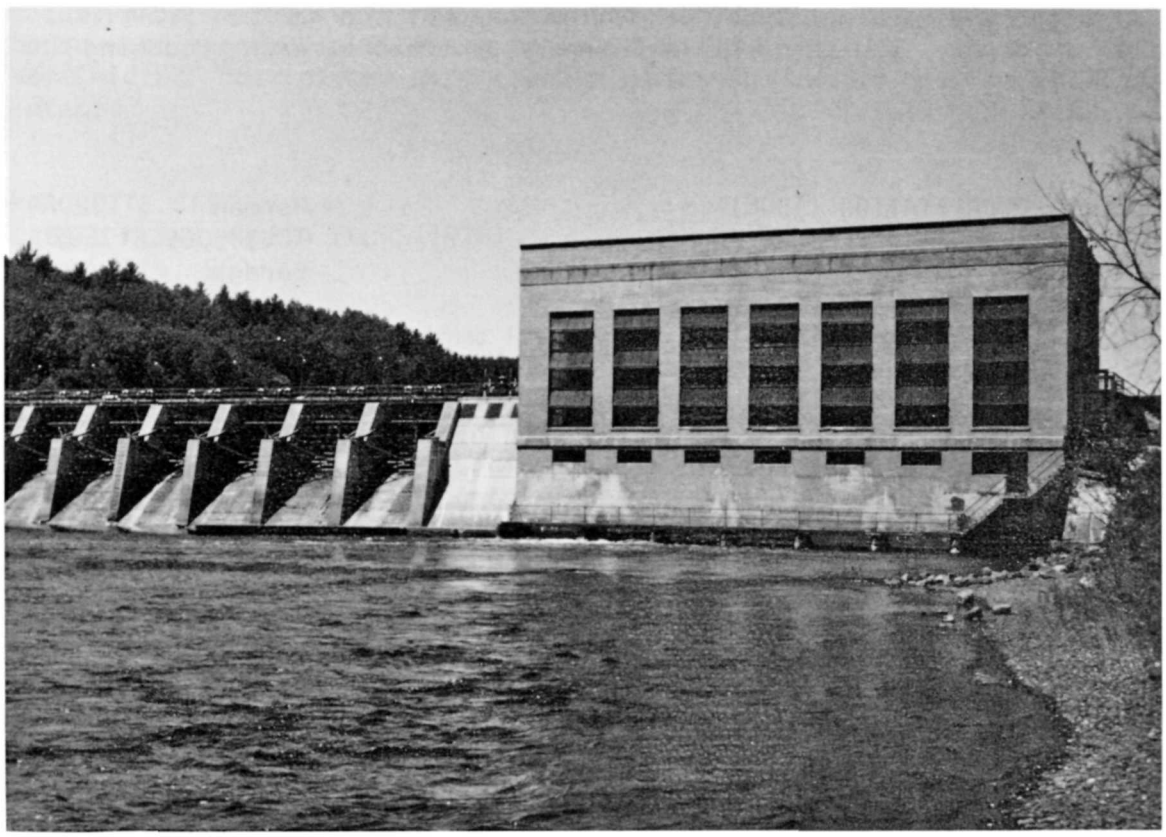
Iron Mountain
16.417800.5075780
Dickinson

This water filtration plant was designed by Hoad, Decker, Schoolcraft, and Drury, consulting engineers, during the administration of E.A. Croll, Superintendent of Waterworks of Iron Mountain. The plant's original capacity was three million gallons per day. It is housed in a T-shaped brick building with hipped roofs, with sections measuring 30 feet by 90 feet and 20 feet by 60 feet.

IRON RIVER DIESEL PLANT (1923)
River St.
Iron River

Iron River
16.373370.5104920
Iron

This diesel generating plant was originally equipped with two Westinghouse generators, rated at 1,070 KW each, operating at 6,600 Volts, 180 R.P.M. The equipment has been removed, and the plant now serves as a district office for the Wisconsin Michigan Power Company. It consists of two distinct, but connected rectangular brick buildings: the diesel room, measuring 49 feet by 68 feet and the turbine room, 41 feet wide and 89 feet long.
[WMPC, p. 22]



Kingsford Hydroelectric Plant (1924), Kingsford

KINGSFORD HYDROELECTRIC PLANT (1924)
Woodward Ave., at the Menominee River
Kingsford

Iron Mountain
16.412600.5073125
Dickinson

The Kingsford Hydroelectric Plant was part of Henry Ford's industrial development of Kingsford which began in the early 1920's (see other entry). Ford closed its Kingsford operations in December 1951, and this plant was purchased by the Wisconsin Michigan Power Company in 1953. The dam is 849 feet long overall, creates a hydraulic head of 30 feet and a pond of 595 acres, and is a gravity dam with concrete core walls. It includes a concrete section containing ten steel radial gates, each 20 feet wide and 14 feet high. The concrete powerhouse, 69 feet wide and 119 feet long, contains the original equipment, which includes three Francis vertical turbines manufactured by the Wellman-Seaver-Morgan Company, and three Allis-Chalmers generators, each producing 3,000 KW, 13,200 Volts, operating at 120 R.P.M.
[WMPC, p. 25; Lewis]

L'ANSE POWER STATION (1908)
Two miles south of L'Anse
L'Anse

Herman
16.389065.5176070
Baraga

The village of L'Anse constructed a small municipal hydroelectric plant in 1908, including a concrete dam and powerhouse equipped with a Leffel horizontal turbine with a Woodward governor and a 120 KW generator. In addition, the plant had a small steam engine driving a 50 KW direct current generator. As the electrical demands of the community increased, the village added a series of seven diesel generators in 1923-1949, ranging in capacity from 90 KW to 398 KW, manufactured by Fairbanks-Morse and Ceterpillar. This plant remained in continuous service between 1908 and 1966, except for the period 1929-1940, when the village purchased power from the Houghton County Power Company. The concrete dam across the Falls River, 120 feet long and 18 feet high, remains, as well as the powerhouse, with none of its equipment extant. The powerhouse is a two-story concrete and concrete block building with a gabled roof, 45 feet wide and 70 feet long.
[Michigan Municipal Utilities Association, Newsletter, IX (Nunberg, July 1955), pp. 1-5]

MARINETTE AND MENOMINEE PAPER COMPANY
HYDROELECTRIC PLANT (1922,1924)
Hattie St., at the Menominee River
Menominee

Marinette
16.449090.4994075
Menominee

When the Marinette and Menominee Paper Company first established a pulp mill on this site in 1891, they erected a wooden crib dam across the Menominee River. The dam provided power for the plant's pulp grinding machines, but in 1922, electrical generation was added with the construction of a powerhouse at the south end of the grinding room. This building, 31 feet wide and 67 feet long, was equipped with two Allis-Chalmers 500 KW generators, operating at 138 R.P.M. The dam, which creates a head of 12 feet, was rebuilt in 1922 with fifteen steel radial gates, each 46 feet 6 inches wide. The three gates next to the powerhouse were removed in 1924 and replaced by three open spillways of the same width. Most of the concrete dam reconstructed in 1922 was left intact.

MARQUETTE CITY
DIESEL PLANT NUMBER FOUR (1926)
County Rte. 550
Marquette

Marquette
16.469100.5157940
Marquette

This plant was built in 1926 after a severe two year drought had strained the city's municipally-owned power system, consisting of three hydroelectric plants (see other entries). The original structure was built of brick 50 feet by 60 feet with two Nordberg diesel engines, each 5 cylinder, 2 stroke, 180 R.P.M., rated at 1,250 break horsepower. In 1947, a 70 foot by 50 foot addition to the building was equipped with two more Nordbergs, 7 cylinder, 2 stroke, to power one Westinghouse and one Electronic Machinery generators. Again in 1957, the building received a 60 foot by 100 foot addition and two 10 cylinder, 2 stroke Nordbergs, and 1963 saw the addition of a 7 cylinder, 2 stroke Nordberg to the same room. These engines all power General Electric generators, and all seven diesels are operational. The five newer engines have a 21.5 inch bore and a 31 inch stroke. The plant produces 15,800 KW and has a 500,000 gallon fuel storage tank to supply the diesels.
[MCHS, No. 49.6]

MARQUETTE CITY HYDROELECTRIC PLANT
NUMBER ONE (1890,1902,1916)
Wright St., at the Dead River
Marquette

Marquette
16.465900.5156780
Marquette

Marquette's first generating plant was constructed in 1890 at a cost of $13,125 on a 400 acre parcel of land purchased for $10,000. The original dam is not extant, and the powerhouse, a concrete structure measuring 82 feet by 100 feet by 25 feet high, has not been used since 1972. Extant equipment includes a General Electric horizontal generator, rated at 1,250 KW, 2,400 Volts, operating at 600 R.P.M., and a Westinghouse horizontal generator rated at 550 KW, 2,400 Volts, operating at 514 R.P.M., both installed in 1902. There is also a Lombard governor built in Ashland, Massachusetts in 1909. In 1916, when Dam Number Two was completed, the older dam was bypassed by linking this plant to the new dam with a wooden penstock 72 inches in diameter and 2,700 feet long, equipped with a concrete "Y" junction, with one line leading to Plant Number One and the other to Plant Number Two, opened further upstream in 1920.
[MCHS, No. 49.6]

MARQUETTE CITY HYDROELECTRIC PLANT
NUMBER TWO (1919,1920,1937)
Wright St., at the Dead River
Marquette

Marquette
16.466420.5157060
Marquette

Provisions for this plant were made in 1916 when the city constructed a concrete "Y" junction at the site of the city Hydroelectric Plant Number One on the twin wooden penstocks which are 2,700 feet long, one 90 inches and the other 72 inches in diameter, and ran from the city Dam Number Two. A concrete surge tank measuring 42 feet by 42 feet by 60 feet was built in 1919, and the "Y" junction was abandoned when Plant Number Two opened and two 440 foot, 72 inch diameter steel penstocks had been added running from the surge tank to the plant. The powerhouse is brick with concrete window ornamentation, designed by Orbison and Orbison of Appleton, Wisconsin and cost $41,750. Extant equipment includes an S. Morgan Smith horizontal turbine developing 2,400 horsepower at 400 R.P.M. and two General Electric generators, each rated at 1,600 KW, 6,600 Volts, operating at 400 R.P.M. The original dam is no longer extant, because it was replaced by the present dam in 1937.
[MCHS, No. 49.6]

MARQUETTE HYDROELECTRIC PLANT
NUMBER THREE (1924)
County Rte. 550, at the Dead River
Marquette

Marquette
16.468560.5157420
Marquette

The city of Marquette's Hydroelectric Plant Number Three is located on the Dead River at the site of the former Hercules Powder Company Mill. The city purchased 384.1 acres from the company for $25,000 in 1920 and constructed a brick power plant designed by Orbison and Orbison of Appleton, Wisconsin at a cost of $21,250. The plant is 25 feet by 50 feet by 35 feet high and is equipped with an S. Morgan Smith turbine, 45 inch reaction type in a concrete pressure case, developing 1,000 horsepower at 180 R.P.M. and driving a General Electric generator, producing 750 KW, 2,400 Volts. The concrete dam is 106 feet long, 21 feet high, with two radial gates and a steel penstock, 8 feet in diameter and 134 feet long, built in 1953.
[MCHS, No. 49.6; Mining Journal Printshop, Reports of the City of Marquette (Marquette, 1920)]

MARQUETTE CITY WATERWORKS (1890,1937)
Lake St.
Marquette

Marquette
16.470930.5154530
Marquette

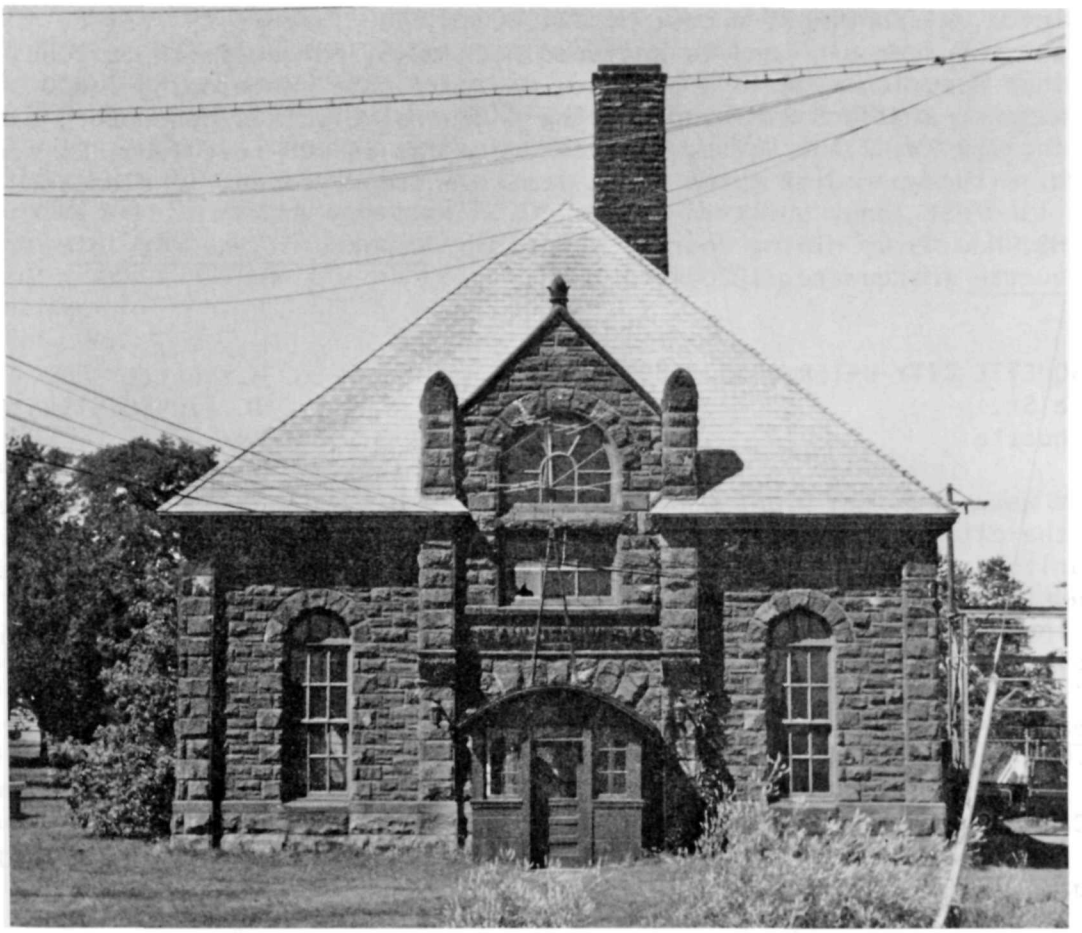
This water pumping plant was completed in 1890 and located on the site of the city's first waterworks building. It was designed by D.F. Charlton and constructed by C.T. Dehaas. The Romanesque red Marquette sandstone building measures 44 feet by 86 feet by 42 feet high, with a hipped roof and 60 foot smokestack. The original steam-driven pumping equipment was removed in 1937 and replaced with three electrically-driven centrifugal pumps.
[Weekly Mining Journal, October 1890, p. 1; Boyer, Program 307]

MCCLURE HYDROELECTRIC PLANT (1919)
On the Dead River
Negaunee Township

Marquette
16.463500.5157450
Marquette

This hydroelectric plant was named after O.D. McClure, the master mechanic of the Cleveland-Cliffs Iron Company in the early 1900's. The brick powerhouse, measuring 40 feet by 92 feet by 45 feet high, holds two General Electric horizontal generators, each rated at 4,000 KW,

2,300 Volts, operating at 600 R.P.M. The dam is located more than two miles upstream from the powerhouse and is linked to it by a penstock, enabling the plant to enjoy an effective head of 424 feet. The penstock has a total length of 13,302 feet and consists of two distinct segments: a wooden section 7 feet in diameter and 9,700 feet long and a steel section 7 feet in diameter and 3,602 feet long.
[CP & LC; Cliff News, April 1963, pp. 12-13; Marquette Mining Journal, February 3, 1967]



Marquette City Waterworks (1890,1937), Marquette

MENOMINEE WATERWORKS (1884)
1000 First St.
Menominee

Marinette
16.452037.4994094
Menominee

Menominee became a city in 1883, and the following year a Boston firm built the waterworks and operated the system as a private concern until the city purchased the system in 1915 for $185,000. The waterworks was originally simply a pumping plant, utilizing a pair of Corliss steam engines to pump Lake Michigan water into the system. The city began chlorination in 1916 and then built a filtration plant and a 300,000 gallon clear well in 1917. An additional clear well of 450,000 gallons was built in 1924, and the original pumps, built by the Deane Steam Pump Company of Holyoke, Massachusetts were removed, along with the steam engines, and replaced with electrically-powered centrifugal pumps. The original pumphouse is a one-story rectangular brick building, 65 feet by 75 feet, with a hipped roof. Adjacent to it is the 1917 filtration plant, surrounded on three sides by later additions. The oldest extant equipment includes two low-level (intake) pumps of 1 and 3 M.G.D. capacity, both electrically-driven centrifugal pumps built by Allis-Chalmers in 1917; two high service finished water pumps, each electrically-driven centrifugal pumps of 1.5 M.G.D. capacity built in 1924; and an emergency backup system, also built in 1924, consisting of a single 3 M.G.D. Delaval pump driven by a 222 horsepower Sterling gasoline engine.
[Anonymous, "History of Menominee Water Department"]

MICHIGAN LAKE SUPERIOR POWER COMPANY
GENERATING PLANT (1902,1916)
On the St. Mary's River
Sault Ste. Marie

Sault Ste. Marie South
16.704740.5152550
Chippewa

The citizens living in the area of Sault Ste. Marie had long recognized the power potential of the St. Mary's River, which drops 20 feet there and in effect draws on Lake Superior as its millpond. Some of the prominent area businessmen organized the St. Mary's Fails Water Power Company in 1885, acquired land holdings, and began constructing a power canal on the American side of the Rapids. The project ran into financial difficulties and was abandoned in 1887. The unfinished canal was later purchased from the people of Sault Ste. Marie for $265,000, the amount of bonded indebtedness, by the newly organized Michigan Lake Superior Power Company, established in 1894 by Frances H. Clergue. The

Michigan Lake Superior Power Company Generating Plant
(1902,1916), Sault Ste. Marie

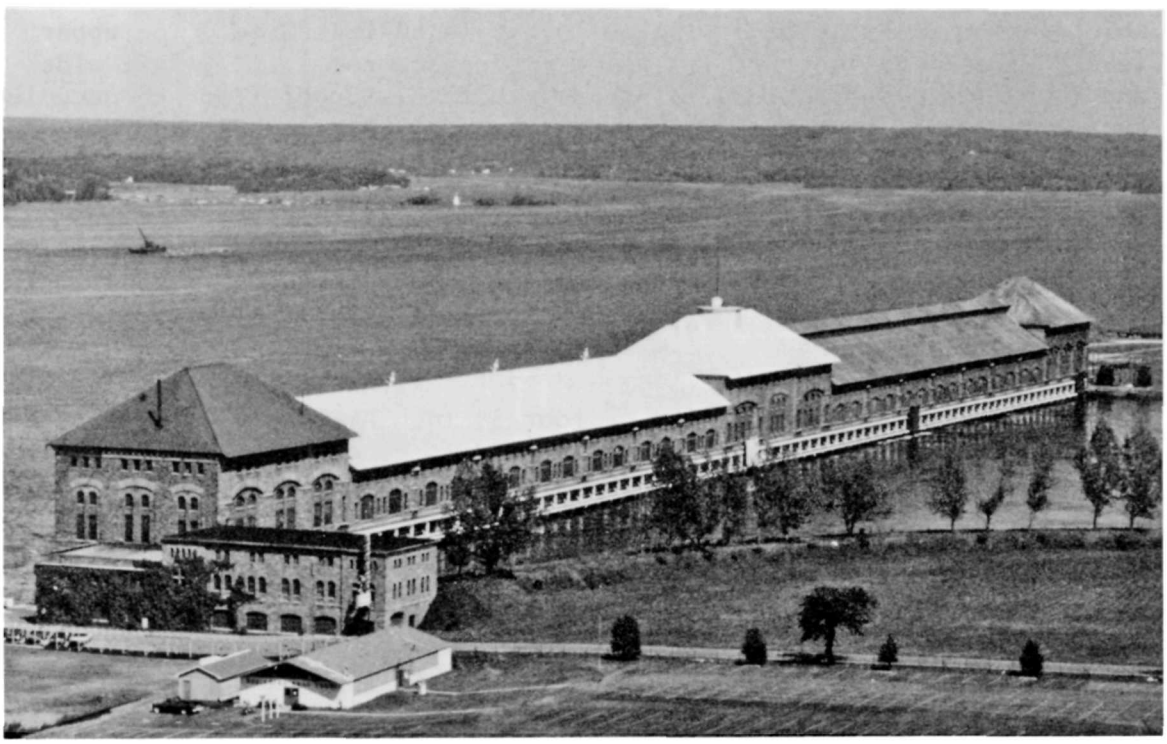
new company developed water power on the Canadian side of the river first, but finally developed the American side by constructing a power canal (see other entries) leading to a large hydroelectric plant in 1898-1902. The entire project was supervised by the company's chief engineer, H. von Schon and cost approximately $4 million. The project officially opened on October 25, 1902, and Clergue spent $50,000 for a celebration featuring parades, fireworks, and a massive banquet with tables running the entire length of the powerhouse. The building is 1,400 feet long, 100 feet wide, and 75 feet high. The red sandstone masonry walls of the powerhouse were built with stone excavated from the canal. It rests on a foundation of 10,000 twenty-foot piles. There are 81 turbine pit walls, each 100 feet long, 20 feet high, and 3 feet thick, constructed of concrete blocks. Above them are 81 penstock partitions, each 20 feet high, 40 feet long, and 17 inches thick. The dynamo room, which is the lower level of the building, is 40 feet wide. The upper level, usually called the mill floor or furnace room, is 75 feet wide and 1,400 feet long. Clergue intended that this upper floor be occupied by an industrial tenant who would use the available power. In fact, the Union Carbide Company moved into the second floor of the building in 1903 to produce calcium carbide, bought the powerhouse in 1913, and remained in it until 1963, when it was sold to Edison Sault Electric Company. Although 81 penstocks were built, only 78 were equipped with turbines and generators, with penstocks Numbers One, Forty-Three, and Eighty-One vacant. The plant was not fully equipped with 78 sets of turbines and generators until 1916, after the Union Carbide takeover. Today, there are 41 turbines installed in 1902 and 37 installed in 1915-1916. The original installation consisted of four 33 inch American turbines operating in tandem in each penstock. The oldest generators in place were either rebuilt or newly installed in 1916.
[Electrical World and Engineer, XL, pp. 483-485; Scientific American, May 26, 1900, pp. 328-329; Engineering Record, XXXVIII, July 23, 1898, pp. 160-161; Engineering News, August 4, 1898, pp. 68-70; Engineering News, XLVIII, September 25, 1902, pp. 226-227; Joseph E. and Mary L. Bayliss, River of Destiny: The St. Mary's (Detroit, 1955), pp. 142-146]

MICHIGAN LAKE SUPERIOR POWER COMPANY
HEADGATES (1902,1917)
At the head of the Power Canal
Sault Ste. Marie

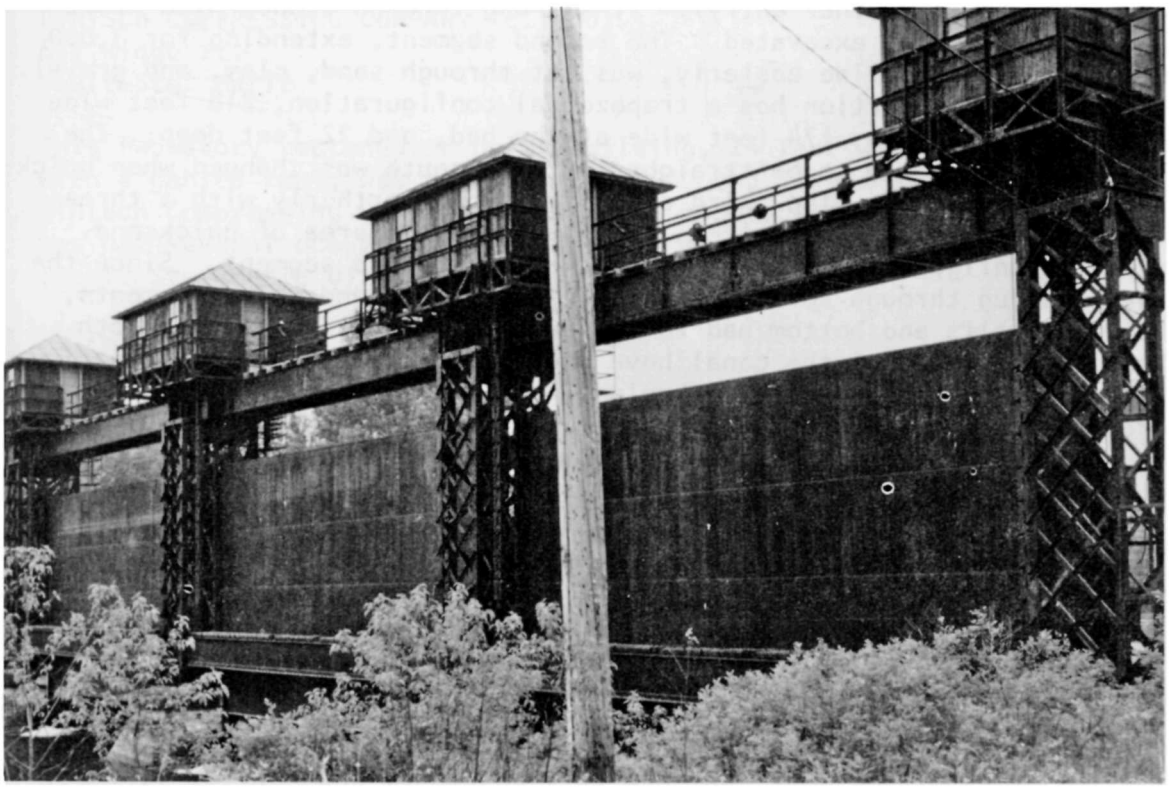
Sault Ste. Marie South
16.702130.5152565
Chippewa

The headgates for the Michigan Lake Superior Power Company Canal (see other entry) are located 2,900 feet south of the canal entrance. They

consist of three masonry piers supporting four steel Stoney sluice gates, each 48 feet wide and 26 feet 8 inches high. They were originally raised by hand, through a geared-down rack and pinion system utilizing counterweights and were designed by Ralph Modjeski, civil engineer. In 1917, two five horsepower electric motors were connected to each gate and enclosed by housings which were built on top of the 35 foot steel towers and framework which were part of the original installation. A concrete apron approximately 40 feet wide and 200 feet long was also added in 1917. [Engineering News, XLVII, September 25, 1902, p. 227; Electrical World and Engineer, XL, September 27, 1902, p. 484]



Michigan Lake Superior Power Company Generating Plant (1902,1916), Sault Ste. Marie



Michigan Lake Superior Power Company Headgates
(1902,1917), Sault Ste. Marie

MICHIGAN LAKE SUPERIOR POWER COMPANY
POWER CANAL (1902)
Around the St. Mary's Falls
Sault Ste. Marie

Sault Ste. Marie South
16.701560.5152760
Chippewa

This impressive power canal, more than two miles long, is one of the most significant engineering features of the Michigan Lake Superior Power Company complex constructed in 1898-1902 (see other entries). The intake section, built by H.W. Hubbell and Company of West Bay City, Michigan, is 950 feet wide at Lake Superior, but then narrows to 250 feet wide after about 1,000 feet, and is 2,900 feet long overall, ending at

the headgates (see other entry). It was dug through stone, with about 500,000 cubic yards excavated. The second segment, extending for 3,000 feet in a straight line easterly, was cut through sand, clay, and gravel. In section, this portion has a trapezoidal configuration, 218 feet wide at the water surface, 174 feet wide at the bed, and 22 feet deep. The canal was originally to be straight, but its route was changed when quicksand was discovered. The third segment extends northerly with a three degree curvature for 3,000 feet, thus avoiding the area of quicksand. It has a configuration similar to that of the second segment. Since the canal was dug through soft materials in the second and third segments, the canal walls and bottom had to be designed to avoid erosion. Both the bed and slopes of the canal have log timber sills resting on bearing piles, and are floored with deck planking. This design is one of the more interesting features of the canal. The second and third segments were built by the E.D. Smith Company of Philadelphia. Finally, the fourth segment is the forebay leading to the powerhouse. Here, the canal widens to a width of 1,400 feet at the powerhouse. The Mason and Hodge Company of Frankfort, Kentucky built the forebay segment and the powerhouse. The canal was designed to deliver about 30,000 cubic feet of water per second. The water moves at about 4 and one-half M.P.H. and loses approximately 3 feet of head over the length of the canal.
[Electrical World and Engineer, XL, September 27, 1902, p. 483; Scientific American, May 26, 1900, p. 328; Engineering Record, XXXVIII, July 23, 1898, p. 162; Engineering News, XL, August 4, 1898, p. 68; Engineering News, XLVIII, September 25, 1902, pp. 226-227; Joseph E. and Mary L. Bayliss, River of Destiny: The St. Mary's (Detroit, 1955), pp. 142-144]

NEGAUNEE CITY WATERWORKS (1882, c.1930)
US-41 and Baldwin St.
Negaunee

Negaunee
16.452970.5150380
Marquette

The Negaunee Waterworks was completed in 1882 by L.F. Pierce and the Negaunee Constructing Company at a cost of $25,000. The sandstone building housing the pumping equipment is extant and measures 50 feet by 60 feet by 25 feet high. The original boilers manufactured by the Iron Bay Manufacturing Company and the pumps, manufactured by T.S. and A.J. Kirkwood, were replaced in the early 1930's by three electrically-driven pumps.
[J.R. Whitaker, "Negaunee, Michigan: An Urban Center Dominated by the Iron Industry," Ph.D. Thesis, Northwestern University (1931), p. 95]

PINTSCH COMPRESSING COMPANY (c.1900)
657 Ridge St.
Sault Ste. Marie

Sault Ste. Marie South
16.702335.5152775
Chippewa

This two-story rectangular brick building, 24 feet wide and 30 feet long, with a gabled roof, was built around 1900 and served as the home for the Pintsch Compressing Company, a coal gas manufacturer, until 1938. It has had several occupants since and is now owned by an oil company. [Sault Ste. Marie Directory, 1910-1940, passim.]

PRICKETT HYDROELECTRIC PLANT (1931)
Prickett Dam Rd.
Baraga Township

Sidnaw
16.372105.5175085
Baraga

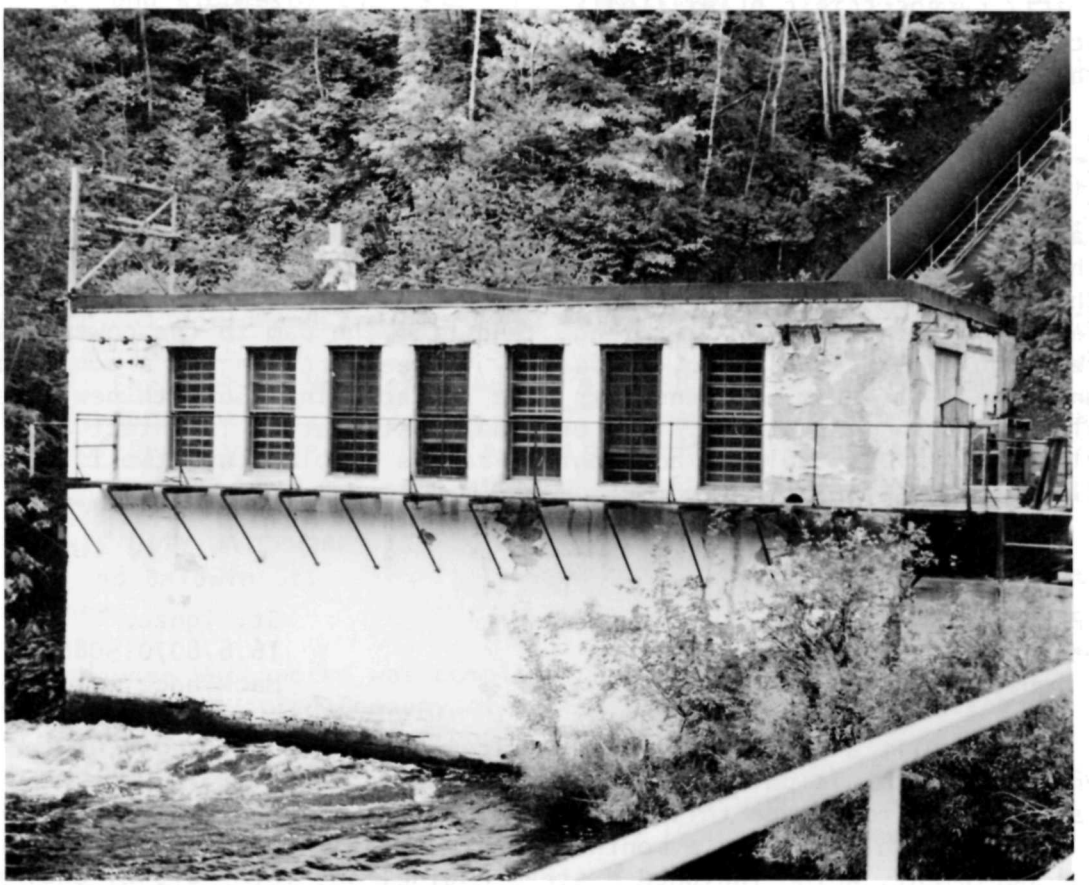
The Prickett Hydroelectric Plant was completed in November 1931, after the Victoria Hydroelectric Plant (see other entry) was also built by the Price Brothers Company for the Copper Range Company. It consists of an earth gravity dam 500 feet long, developing a head of 54 feet, with a concrete spillway segment containing three steel radial gates, each 13 and one-half feet long and 24 feet high. Two penstocks, each 8 feet in diameter and 77 feet long, lead from the dam to the powerhouse, a rectangular brick building, 20 feet by 45 feet, resting on a concrete foundation. The original penstocks were replaced in 1966 with new ones built of Douglas fir staves. The original installation is intact and includes two Allis-Chalmers horizontal Francis turbines and two 1,375 KW Allis-Chalmers generators.

ST. IGNACE ELECTRIC AND WATER COMPANY (1889)
Foot of Bertrand St.
St. Ignace

St. Ignace
16.678070.5080690
Mackinac

St. Ignace built a water supply system in 1889 at a cost of $48,000 and then erected a municipal electric power plant in 1892 for $9,000. The first engineer to manage this combined plant was Richard Boulton, who was appointed in 1892 with a monthly salary of $75. None of the original equipment, which included a steam engine, and later diesel engines, has survived. The plant was sold to Edison Sault Electric Company in the early 1930's, and the original building housing this equipment was converted to office space in 1962. It is a single-story brick and

stucco building, 70 feet square, with a hipped roof. Attached to it is a two-story concrete addition built in the early 1920's, measuring 45 feet by 40 feet, with a gabled roof, and a cinder block addition built in the 1950's.
[Emerson R. Smith, Before the Bridge: A History of St. Ignace (St. Ignace, 1957), p. 94]



Saxon Falls Hydroelectric Plant (1912), Ironwood Township

SAXON FALLS HYDROELECTRIC PLANT (1912) — Little Girls Point
Saxon Falls Rd., at the Montreal River — 15.701000.5156085
Ironwood Township — Gogebic

The hydroelectric plant at Saxon Falls was built in 1912 by the Ironwood and Bessemer Light, Power, and Street Railway Company and then sold in 1922 to the Lake Superior District Power Company, the present owners. It consists of a rectangular concrete powerhouse, 30 feet by 53 feet, housing two horizontal Allis-Chalmers turbines and two General Electric generators, each rated at 625 KW, 2,300 Volts, operating at 600 R.P.M. Twin steel penstocks, each 52 inches in diameter, run from the powerhouse to the dam which is located approximately 1,500 feet upstream and provides this plant with a hydraulic head of 135 feet. There is a steel surge tank located at the powerhouse to absorb any sudden changes in water pressure in the penstocks.

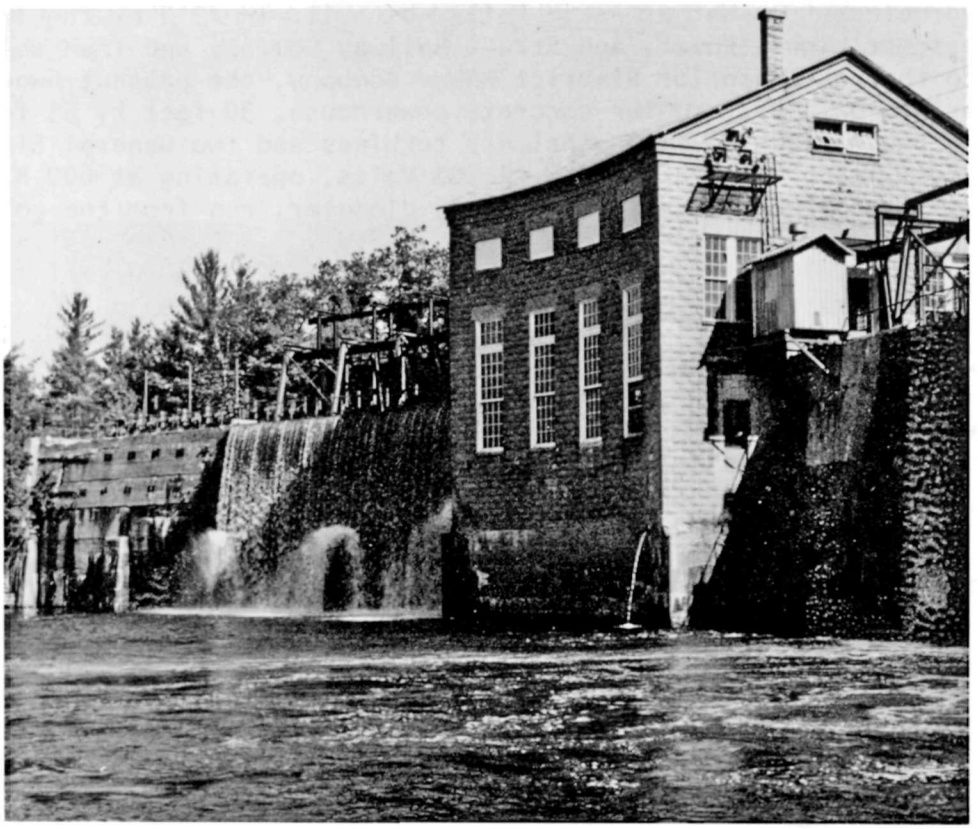
STURGEON FALLS HYDROELECTRIC PLANT (1905) — Pembine
At Sturgeon Falls, on the Menominee River — 16.432090.5065050
Norway Township — Dickinson

This Menominee River hydroelectric plant was built in 1905 by the Penn Iron Company, which ran the plant until 1946, when the City of Norway bought it. The finished stone powerhouse has a curved configuration, concave against the flow of the Menominee River. The original equipment, still extant, includes one Westinghouse 2,000 KW generator and a General Electric 1,500 KW generator, both operated at 180 R.P.M., and driven by a pair of Leffel vertical turbines. Flanking both sides of the powerhouse are two sets of ten vertical lift sluice gates atop the concrete arch dam.
[Vulcan: Michigan Centennial, 1872-1972, pp. 91-92]

STURGEON HYDROELECTRIC PLANT (1923) — Vulcan
On the Sturgeon River — 16.439210.5070740
Waucedah Township — Dickinson

This plant consists of a concrete arch dam, a small brick powerhouse located downstream, and a tunnel, 7 feet in diameter and 252 feet long, carrying water from the dam to the turbines. The dam is 310 feet long, 53 feet high, and creates a pond of 248 acres. It consists of an open

spillway segment 217 feet long, a trash gate, and a headgate. The brick powerhouse, measuring 21 feet by 34 feet, houses the single Westinghouse generator, a 1,000 KW unit operated at 2,300 Volts, 400 R.P.M. [WMPC, p. 20]



Sturgeon Falls Hydroelectric Plant (1905), Norway Township

SUPERIOR FALLS HYDROELECTRIC PLANT (1917) — Little Girls Point
Wisconsin Rte. 122, at the Montreal River — 15.698000.5159080
Ironwood Township — Gogebic

The Ironwood and Bessemer Light, Power, and Street Railway Company built this plant in 1917 and then sold it to the Lake Superior District Power

Company, the current owners. The plant was designed by the L.E. Meyers Company of Chicago and consists of a reinforced concrete gravity type dam, 240 feet long and 28 feet high, located 2,000 feet upstream from the powerhouse and connected to it by a penstock, originally constructed of hemlock, then replaced in 1935 by one built of redwood, which was in turn replaced by the present concrete and steel penstock. The powerhouse, 33 feet by 63 feet overall, houses two Allis-Chalmers horizontal turbines which drive two General Electric generators, each 950 KW, 2,300 Volts, operating at 600 R.P.M.

TWIN CITY GENERAL ELECTRIC
COMPANY (1890,1927) — Ironwood
Pine St., at Balsam St. — 15.717185.5147500
Ironwood — Gogebic

This building originally housed the steam-powered central power plant of the Twin City General Electric Company. It was converted into an electrical substation in 1927, and the original gabled roof was replaced with a flat roof. This rectangular building, 20 feet by 132 feet, has rubble masonry footings and walls. None of the original equipment is extant.
[Lake Superior District Power Company, Souvenir of Gogebic County, Michigan (Iron Mountain, c.1905)]

TWIN FALLS HYDROELECTRIC PLANT (1912) — Iron Mountain
At Twin Falls, on the Menominee River — 16.417000.5080260
Breitung Township — Dickinson

The Twin Falls Hydroelectric Plant is one of the oldest remaining on the Menominee River. The plant was built by the Peninsular Power Company, organized in 1911, with O.C. Davidson of the Oliver Mining Company as its first president. Peninsular sold its plants at Twin Falls and Big Quinnesec Falls (see other entry) in 1924 to North American Investment, which also owned the Wisconsin Traction, Light, Heat, and Power Company. The two companies merged in 1927 to form the Wisconsin Michigan Power Company. The earth gravity dam, which has concrete core walls, is 924 feet long overall, 40 feet high, and produces a hydraulic head of 44 feet and a pond of 1,120 acres. It has two concrete spillway sections, one with three steel radial gates, the second with four. The powerhouse consists of a generator room, 49 feet wide

and 123 feet long, and an adjoining switchhouse, 21 feet by 75 feet. The original equipment, all extant, includes five Francis horizontal turbines manufactured by the Leffel Company in Springfield, Ohio; two generators rated at 1,370 KW and three generators rated at 1,250 KW, all manufactured by Westinghouse and producing 6,600 Volts at 257 R.P.M.
[WMPC, p. 13; Iron Mountain News, July 1, 1976, p. 17]

VICTORIA DAM (1931)
Victoria Dam Rd.
Victoria

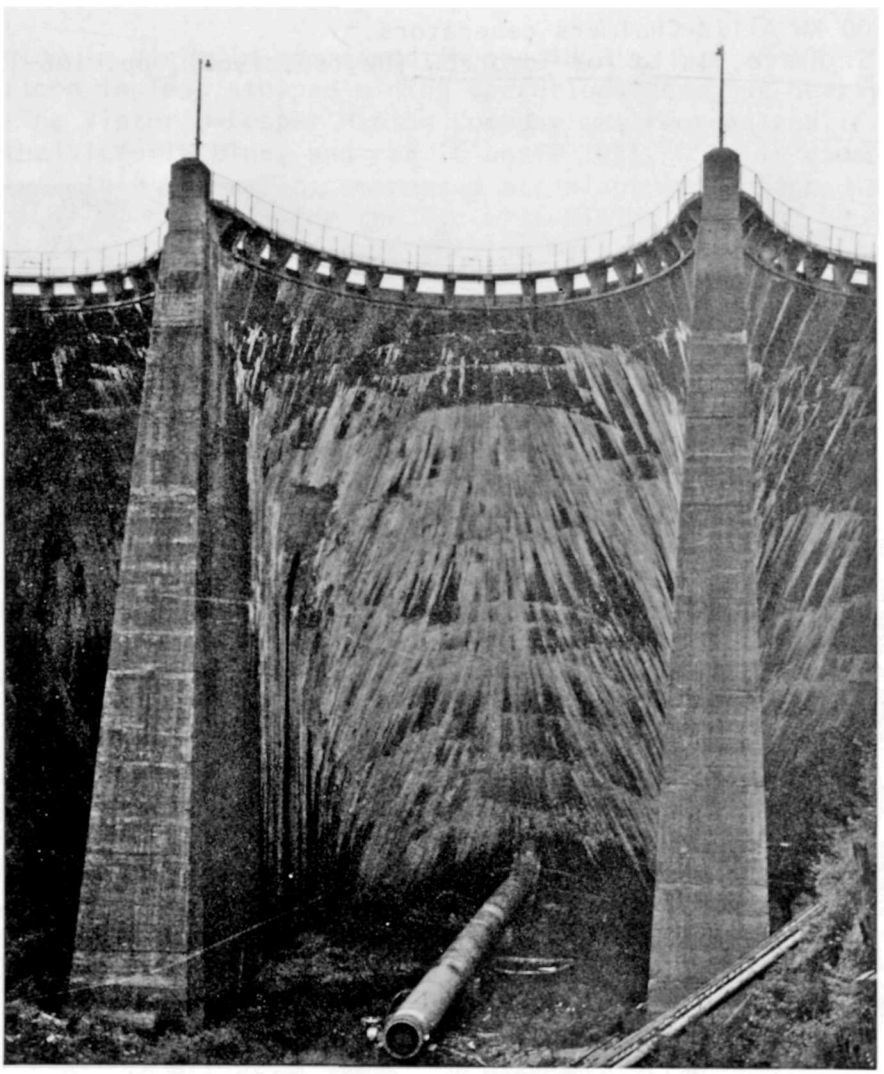
Rockland
16.329050.5172083
Ontonagon

This concrete multiple-arch dam was erected by the Price Brothers Company, general contractors, in 1929-1930 and was dedicated on New Years Day 1931. It was designed by the engineering firm of Holland, Ackerman, and Holland for the Copper Range Company's hydroelectric development at this site. The complex cost $4.5 million and included this dam, the powerhouse (see other entry) located downstream, and a 10 foot diameter penstock constructed of California redwood staves, 6,050 feet in length. This penstock was replaced in 1959 with one of the same dimensions, but constructed of Douglas fir, utilizing the original concrete saddles. The entire complex was acquired by the present owners, the Upper Peninsula Power Company, in 1947. The dam consists of four large concrete arches extending across a deep gorge, and a concrete tainter gate section with the largest arch measuring 115 feet tall. The arches, which are inclined at a 45 degree angle to the downstream side, are 4 feet thick at the toe and 2 feet thick at the crest. The arches have a diameter of 68 feet and a circumference of 107 feet. While the dam itself creates a head of 115 feet, the penstock gives the plant an additional operating head of 100 feet, for a total of 215 feet.
[Harry S. Price, Build for Tomorrow (Dayton, 1960), pp. 106-125]

VICTORIA HYDROELECTRIC PLANT (1931)
Victoria Dam Rd.
Victoria

Rockland
16.331000.5173080
Ontonagon

The Victoria Hydroelectric Plant was constructed in 1929-1930 and dedicated on New Years Day 1931. It was designed by the engineering firm of Holland, Ackerman, and Holland for the Copper Range Company and was built by the Price Brothers Company, general contractors, at a cost of $4.5 million. The plant includes a multiple-arch concrete dam and a



Victoria Dam (1931), Victoria

6,050 foot penstock (see other entry), along with this powerhouse located downstream from the dam. This rectangular brick powerhouse, 25 feet by 70 feet, rests on a concrete foundation. It houses the original installation, which includes two S. Morgan Smith vertical Francis turbines and two 7,500 KW Allis-Chalmers generators.
[Harry S. Price, Build for Tomorrow (Dayton, 1960), pp. 106-125]

Victoria Hydroelectric Plant (1931), Victoria

VICTORIA MINING COMPANY
AIR COMPRESSOR (1906)
South of Victoria Dam
Victoria

Rockland
16.329050.5172083
Ontonagon

Copper mining in Victoria commenced in the 1850's, but a major forest fire and flood in 1858 stopped mining operations here for nearly a half century. The Victoria Copper Mining Company was reorganized in 1899, reopened the Victoria Mine, and ran it until 1921, when it closed permanently. This hydraulic compressed air plant was designed and built by C.H. Taylor of Montreal for the Victoria Mining Company. Opened in 1906, this plant uses the power of falling water from the Ontonagon River to produce compressed air, at a pressure of 117 pounds per square inch, without utilizing any moving parts. A concrete dam 300 feet long and 10 feet high was built across the river, along with a 6,000 foot long canal with a sectional area of 350 square feet. The dam was replaced by the Victoria Dam in 1931 (see other entry) and only a few remnants of the canal remain. At the end of the canal, the water entered three vertical shafts 342 feet deep leading to an underground air storage chamber 282 feet long, varying in width from 57 feet to 18 feet, and measuring between 22 and 25 feet in height. This underground air chamber has a total capacity of 80,264 cubic feet. On the end of the chamber opposite the entrance pipes, there is a tunnel, 18 feet by 10 feet by 40 feet long, leading to an inclined shaft which carries the water back to the river, a point 71 feet below the entrance point, thus giving the plant an effective hydraulic head of 71 feet. Two pipes lead from the underground chamber, a 24 inch air pipe carrying the compressed air to the mine, and a 12 inch blow-off pipe which serves as an automatic governor for the plant. The plant operated in the following manner: the water falling through the entrance shafts passed over a series of three-eighths inch air tubes, thus enclosing small bubbles of air in the descending water, and gradually compressing this air during the descent. Upon reaching the underground chamber, the air would rise to the top of the chamber and the water was forced out of the inclined shaft to the surface. The 12 inch blow-off pipe served as a governor because when the air pressure in the chamber was too low, the water level rose and closed the blow-off pipe, thus preventing any escape of air. On the other hand, when the air pressure in the chamber was too high, i.e., above 117 P.S.I., the water level was forced down, exposing the end of the blow-off pipe, and sending a mixture of compressed air and water to the surface, where it creates a geyser effect.

This air compressor plant was last used in 1929-1931, when the Victoria Dam was built and all that remains in terms of visible surface structures are the three intakes enclosed by a steel framework, all of which were originally enclosed by a small building.
[Sawyer, p. 502; "The Hydraulic Compressed Air Plant at the Victoria Mine," Engineering and Mining Journal, LXXXIII, January 19, 1907, pp. 125-130; Mines Handbook and Copper Handbook, XII (1916), p. 1,193; PLSMI, XII (August 1906), pp. 48, 148-149]

WHITE RAPIDS HYDROELECTRIC PLANT (1927) — Wausaukee
On the Menominee River — 16.437030.5036060
Holmes Township — Menominee

The White Rapids Hydroelectric Plant was constructed in 1927 and then sold in 1937 by Northern Electric Company to the Wisconsin Michigan Power Company, the present owners. It includes a rectangular brick powerhouse, 36 feet wide and 133 feet long, featuring ornamental stonework and stained glass windows. This plant has the original equipment intact, including three S. Morgan Smith, Francis vertical turbines, two generators rated at 3,720 KW and a third rated at 2,500 KW, all operating at 2,300 Volts. The earth gravity dam, which is 1,236 feet long, creates a hydraulic head of 29 feet, and was constructed with steel sheet pilings. It includes a concrete spillway section with nine steel radial gates.
[WMPC, p. 31; Iron Mountain News, July 1, 1976, p. 17]

CORLISS STEAM ENGINE (1912)
Abbott Fox Community Park
Trout Creek

Watersmeet
16.344045.5149017
Ontonagon

This engine was built by the Allis-Chalmers Company in 1912 for use in a Minneapolis flour mill. In 1921, it was purchased by the Weideman Lumber Company for their Trout Creek sawmill, which was later owned by the Abbott Fox Lumber Company. It was retired in 1968 and has since been restored and is now displayed in a community park. This 500 horsepower engine has a 28 inch bore, 48 inch stroke, a flywheel measuring 16 feet in diameter and 46 inches wide, and operated at a pressure of 90 pounds per square inch.

CHAPIN MINE PUMPING ENGINE (1891)
Kent St., at Carpenter Ave.
Iron Mountain

Iron Mountain
16.416960.5074860
Dickinson

This steam pumping engine was built by the E.P. Allis Company of Milwaukee in 1891 and was designed by the company's chief engineer, Edwin Reynolds, and was installed in 1892 at the Chapin Mine (see other entries) at a cost of $25,000 and first operated on January 3, 1893. This pumping engine was first situated at the Chapin Mine site in 1893-1896 and was then disassembled and moved to its present location at the "C" Ludington Shaft, where it continued in operation until 1914, when it was replaced with electric pumps. The engine's capacity of 3,400 gallons per minute was sufficient to handle the Chapin Mine's normal flow of about 3,000 gallons per minute. The Chapin Mine was permanently closed in 1934, and the building housing this engine was demolished, but the engine was donated to the City of Iron Mountain. It is a vertical tandem compound steam engine with a high pressure cylinder 50 inches in diameter, a low pressure cylinder 100 inches in diameter, and a piston stroke of 120 inches. It stands 54 feet tall and has a flywheel 40 feet in diameter. The engine weighed 160 tons and according to its builders, was the largest of its type ever constructed. Underground, there were ten pumps in a vertical shaft, eight set at intervals of 192 feet and two at intervals of 170 feet on the pump rod, extending a total of 1,500 feet below the surface.
[Iron Mountain News, July 1, 1976; Sawyer, p. 545; David Skillings, "Chapin Pump . . . Mechanical Wonder," Skillings' Mining Review; Paul C. Ziemke, "Old Pumping Engine Preserved for Posterity," Compressed Air Magazine, November 1947, pp. 276-277]

INTRODUCTION TO TRANSPORTATION

The transportation category includes all structures and equipment associated with inland navigation, marine transportation, railroad networks, highways, and air transport. This section is comprised mainly of sites relating to marine transportation and railroads, historically the most significant means of transportation in the Upper Peninsula. Not surprisingly, the early development of transportation networks in this region was closely linked to the exploitation of its principal natural resources--iron, copper, and timber.

The development of Great Lakes navigation in the nineteenth century was vital to the exploitation of the region's mineral resources. Once the navigation canal around the St. Mary's Falls at Sault Ste. Marie was opened in 1855, there were no major barriers to trade with the lower Great Lakes. The subsequent increase in marine traffic prompted the first major boom in lighthouse construction, which continued into the twentieth century as shipping patterns changed, and the major lanes became increasingly clogged. The Inventory includes fourteen lighthouses constructed in 1855-1869, nine built in the 1870's, and an additional fourteen erected between 1880 and 1920. Nine isolated lighthouses, mostly offshore, were not visited during the survey and are simply listed on a separate page at the end of this section. The Inventory also contains a variety of extant ships ranging from the wooden schooner, the Alvin Clark (1846) to the 550 foot ore carrier, the Louis W. Hill (1917).

A few ports controlled the shipment of ores during the nineteenth century, with Marquette and Escanaba serving the iron mines, and the twin cities of Houghton-Hancock on Portage Lake dominating the trade in copper. Marquette was the exclusive shipping point for iron ore in 1846-1864, and it remained the leading port until the early 1870's, when it was surpassed by Escanaba. The Chicago and Northwestern Railroad constructed its first line in 1865 to link the Marquette Range mines with the warmer water port of Escanaba on Lake Michigan. After the development of the Menominee Range mines in the late 1870's and 1880's, Escanaba became the premier iron port of the Upper Peninsula, with more than a dozen major docks by the turn of the century. Ashland, Wisconsin served the Gogebic Range mines throughout their productive history. All the ore docks were constructed of massive timbers prior to 1912, when the Lake Superior and Ishpeming Railroad completed the second reinforced concrete dock in the United States at Presque Isle, north of Marquette. It is still standing, along with the Duluth, South Shore, and Atlantic Railroad dock (1932) in Marquette. None of the earlier wooden structures have survived.

There were significant improvements in the marine transportation system throughout the nineteenth century, particularly as shippers developed larger bulk carriers. Enlarged locks were completed at the St. Mary's Falls in 1881, 1896, 1914, and 1919, with accompanying enlargement and deepening of the approach channels. With numerous subsequent alterations at this site, the Davis Lock (1914) is the oldest one remaining. There are also two historic breakwaters in this section, at Marquette Harbor (1894) and at Presque Isle Harbor (1926). Two major developments in the Copper Country should be mentioned as well, although there are no clearly-identifiable remains from either. The Portage Lake Ship Canal, offering a short-cut through the Keweenaw Peninsula, was completed in 1873, and several mining companies jointly built a channel connecting Torch Lake and Portage Lake, completed in 1875.

The railroad network began with a series of short specialized lines built to connect the mines with the ports. The earliest were the Iron Mountain Railroad, built in 1855-1857 to link Negaunee and Marquette, the Peninsula Railroad between Marquette and Escanaba (1864), and the Marquette and Ontonagon Railroad, which reached Champion in 1865 and L'Anse in 1872. In the Copper Country, the Calumet and Hecla Mining Company built a four mile line from Calumet to Lake Linden in 1866, and the Mineral Range Railroad opened a line connecting Hancock and Calumet in 1873. Other significant mining railroads included the Lake Superior and Ishpeming (1896) and the Copper Range Railroad (1900) linking Mass City and Houghton.

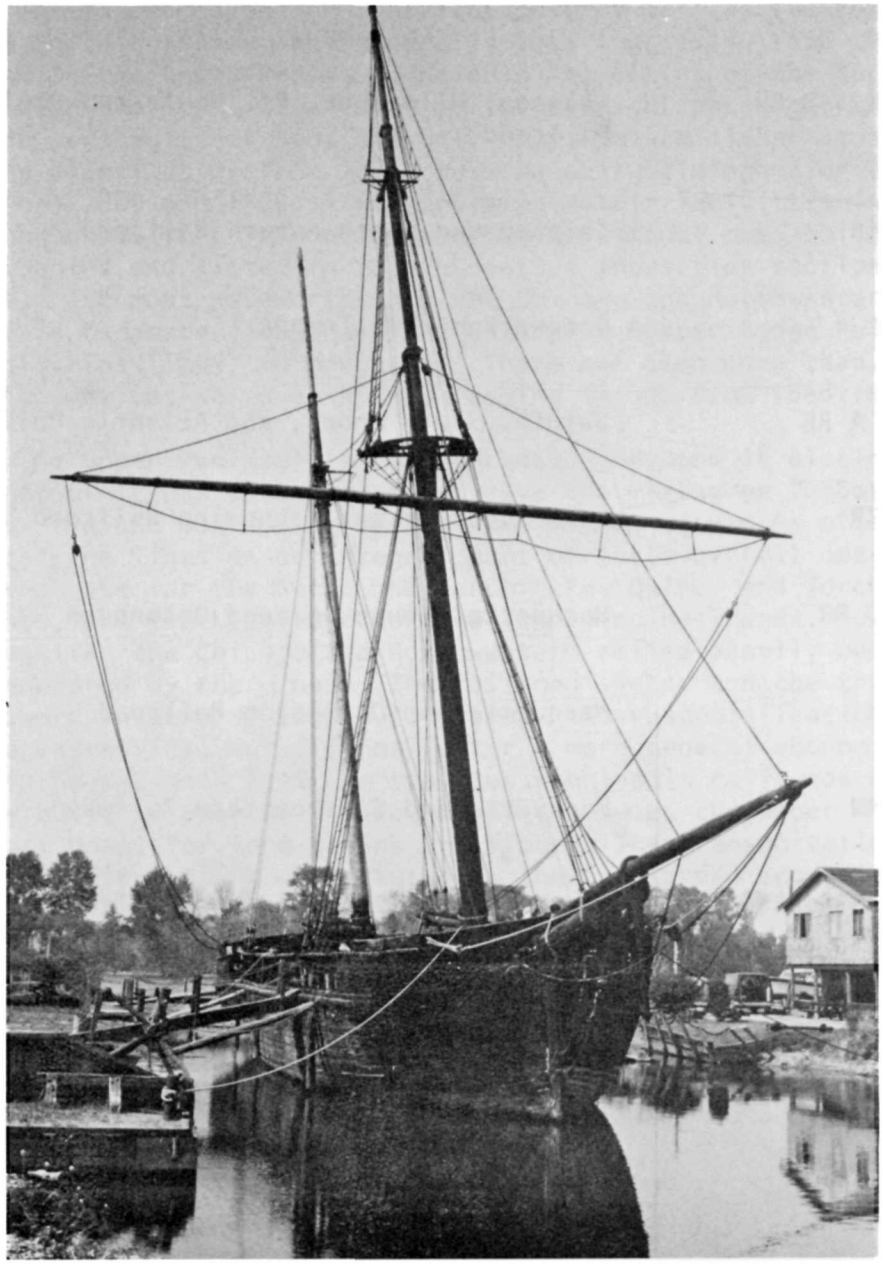
General-purpose railroads serving the entire region did not emerge until the 1880's. The Duluth, South Shore, and Atlantic absorbed several smaller railroads in 1886 and opened its main line between Duluth and Sault Ste. Marie in 1887. At the same time, the Minneapolis, St. Paul, and Sault Ste. Marie Railroad, more commonly called the "Soo Line", also constructed a line between Minneapolis and Sault Ste. Marie in 1884-1887. The construction of an international railroad bridge at Sault Ste. Marie in 1887 (see Bridges section) completed a rail system linking the upper Midwest with the East Coast of the United States. These two major systems merged in 1961 to form the Soo Line Railroad Company. Electric interurban systems were rare in this sparsely populated region, with the extensive Houghton County Traction Company system, begun in 1900, and the Escanaba Street Railway Company (1911) the two most notable exceptions.

The passenger and freight stations, as well as the repair facilities in this survey, are generally less impressive than those encountered in the Lower Peninsula because the cities of the Upper Peninsula were much smaller. Of a total of thirty-eight passenger stations, twenty-four were built of wood and only fourteen are either stone or brick. The oldest dates from 1874, but the overwhelming majority were built between 1880 and 1900. The surviving repair facilities include twelve roundhouses in this section and two additional ones built by mining companies and listed in the Extractive Industries section of the volume. The most noteworthy are the Chicago and Northwestern Roundhouse in Escanaba (1869) and the extensive Copper Range Railroad repair facilities (1899) in Houghton. There are also more than a dozen railroad locomotives at seven sites, ranging in age from 1868 to 1916.

The Upper Peninsula's transportation network is distinctive because most of it was constructed to serve the mining or lumbering industries. In the case of railroads, the mining companies often built and operated the lines as an integral part of their overall operations. This was the case for the Hecla and Torch Lake, Quincy and Torch Lake, Copper Range, and the Lake Superior and Ishpeming Railroads. Other major lines like the Chicago and Northwestern relied heavily on the traffic generated by the mines. The railroad system and the transportation network in general tended to promote heavy specialization in the extractive industries, but did not foster a more general economic development of the region. Even the two cross-peninsula railroads were originally built to provide a through route between the upper Midwest and the East Coast for food grains and flour. The transportation system both reflected and contributed to the unbalanced economic development of the region.

RAILROAD ABBREVIATIONS

C, M, SP & P RR	Chicago, Milwaukee, St. Paul, and Pacific Railroad
C & NW RR	Chicago and Northwestern Railroad
CR RR	Copper Range Railroad
D, SS & A RR	Duluth, South Shore, and Atlantic Railroad
LS & I RR	Lake Superior and Ishpeming Railroad
M, H & O RR	Marquette, Houghton, and Ontonagon Railroad
M & O RR	Marquette and Ontonagon Railroad
M & SE RW	Marquette and Southeastern Railway
M, SP & SSM RR	Minneapolis, St. Paul, and Sault Ste. Marie Railroad
N & N RW	Nahma and Northern Railway
Q & TL RR	Quincy and Torch Lake Railroad



The Alvin Clark (1846), Menominee

THE ALVIN CLARK (1846)
Mystery Ship Seaport
Menominee

Marinette
16.451025.4994044
Menominee

The Alvin Clark is a single-deck, two-masted, square-sterned wooden sailing ship, 113 feet long, 24 feet wide, and 14 feet deep from rail to keel. She was built mostly of white oak, had a main mast of 110 feet, outer planking 2 and one-half inches thick with 10 inch ribs, and inner planking 2 and one-half inches thick. The ship was built in 1846 at Truago, Michigan, probably by John Clark, who had a son named Alvin. In 1864, she capsized and sank in a storm off Chambers Island in Green Bay, about 15 miles from Menominee. In November 1967, a commercial fishing vessel caught its nets on the Alvin Clark's masts and divers sent down to free the nets discovered the schooner lying on the bottom intact. After several unsuccessful efforts to raise the ship in 1968, she was brought to the surface on July 29, 1969 and is now the centerpiece for a maritime museum in Menominee.

BETE GRIS [MENDOTA] LIGHTHOUSE (c.1870)
On Mendota Point
Point Mendota

Point Isabelle
16.427000.5246960
Keweenaw

The Bete Gris (Mendota) Lighthouse guides shipping into the Mendota Ship Canal and consists of a brick lightkeeper's house and an attached brick light tower. The house is a simple rectangular structure, 20 feet by 25 feet, with a gabled roof, while the tower is 8 feet square and 40 feet high.

BIG BAY POINT LIGHTHOUSE (1896)
On Big Bay Point
Big Bay

Big Bay
16.448015.5187055
Marquette

The Big Bay Point Lighthouse was authorized by an act of Congress in 1893 and was completed at a cost of $25,000 in 1896. The lighthouse is a two-story brick dwelling, 52 feet by 52 feet with 18 rooms, with the light atop a tower rising from the middle of the house and standing 105 feet above the lake. There is also a small brick building, 20 feet by 15 feet that housed a steam-powered foghorn which was replaced in 1928 by a modern air diaphone. The lighthouse is no longer maintained by the Coast Guard, having been sold in 1961.
[USCG, Light List, p. 119; MCHS, No. 49.6]

Big Bay Point Lighthouse (1896), Big Bay

BIG SABLE [AU SABLE]
LIGHT STATION (1873,1909)
On Au Sable Point
Grand Marais

Au Sable Point
16.565850.5168940
Alger

The segment of the Lake Superior coast that this lighthouse was intended to illuminate, between Munising and Grand Marais, was commonly called the "Graveyard Coast" because of the large number of shipwrecks it produced. The Big Sable Light Station, renamed the Au Sable Light Station in 1910, was constructed at an isolated site west of Grand Marais. The conical brick tower, resting on a foundation of cut stone, is 16 feet 6 inches in diameter at the base, tapers to a diameter of 12 feet 8 inches

at the top, and is 87 feet high. The attached brick lightkeeper's house was originally a single-story building, but was enlarged to two stories in 1909. There is another keeper's dwelling west of the tower, a two-story brick structure, with a hipped roof, also built in 1909. There is also a brick oil house and a privy, both built in 1873. The United States Coast Guard took this facility out of service in 1958 and transferred the property to the National Park Service for inclusion in the Pictured Rocks National Lakeshore.
[USCG, Light List, p. 117; Holland, p. 186; NR]

Big Sable [Au Sable] Light Station (1873,1909), Grand Marais

C, M, SP & P RR: IRON MOUNTAIN
STATION (c.1910)
East B St.
Iron Mountain

Iron Mountain
16.417180.5074065
Dickinson

This brick passenger station was built around 1910 and permitted the conversion of the Chicago, Milwaukee, St. Paul, and Pacific Railroad's first station into a freight facility (see other entry). This rectangular building is 25 feet wide and 100 feet long, with a hipped roof and an adjoining covered passenger platform 25 feet wide and 30 feet long.

C, M, SP & P RR: MENOMINEE
FREIGHTHOUSE (1885)
Fourth Ave., at Third St.
Menominee

Marinette
16.452045.4994020
Menominee

The Chicago, Milwaukee, St. Paul, and Pacific Railroad built a spur from its main line in Wisconsin to Menominee in 1885, and this freighthouse was built at that time. It is a simple wood-framed rectangular one-story building with a gabled roof, 30 feet wide and 90 feet long, with six loading doors, each 15 feet wide, facing the tracks.

C, M, SP & P RR: MENOMINEE
STATION (1885)
219 Third St.
Menominee

Marinette
16.452070.4994020
Menominee

This attractive wooden passenger station was built when the Chicago, Milwaukee, St. Paul, and Pacific Railroad reached Menominee in 1885. Measuring 20 feet wide and 80 feet long, it features a hipped roof with wide overhanging eaves supported by wooden brackets. There is a covered passenger waiting platform, 25 feet by 30 feet, at the east end of the station.

C, M, SP & P RR: Menominee Station (1885), Menominee

C & NW RR: ESCANABA REPAIR SHOPS (c.1869-1890)
East of Third Ave.
Escanaba

Escanaba
16.495047.5065080
Delta

The Chicago and Northwestern Railroad took over a line built by the Peninsula Railroad between Marquette and Escanaba in 1865 and in the same year opened a second line between Negaunee and Escanaba. This port city on Lake Michigan quickly became the premier ore shipping point of the Upper Peninsula, and the railroad built a major repair facility and tie-treating plant here, complementing its important ore docks. Escanaba became the Chicago and Northwestern Railroad's divisional headquarters, employing about 750 men in the late nineteenth century. The

roundhouse was described in 1869 as just completed, with fifteen fire-proof stalls. By 1890, the roundhouse had nineteen additional stalls, probably built before 1881, when a bird's-eye view of the city showed an enlarged building. Also by 1890, in addition to the roundhouse, this repair facility included a brick machine shop, 30 feet by 300 feet, and a blacksmith shop, 60 feet by 300 feet. This complex is greatly diminished from its previous size. The roundhouse was reduced in size in 1952 and again in 1961, leaving only six stalls standing. The building has an inside diameter of 60 feet, an outside diameter of 200 feet, and is 90 feet deep. It is a wood-framed structure, with the exception of one exterior wall which was originally an interior fire wall between portions of the roundhouse. Nearby there is a center-mounted steel girder turntable, 12 feet wide and 95 feet long. The blacksmith shop is still standing, as well as a small portion of the machine shop.
[Dunbar, p. 117; Sawyer, p. 371; Walter Nursey, The City of Escanaba, Michigan: Iron Port of the World (Escanaba, 1890), p. 64; J.J. Stoner, Bird's-Eye View of Escanaba, Michigan 1881: History of the Upper Peninsula of Michigan (Chicago: Western Historical Company, 1883), pp. 238-239; Escanaba Tribune, December 9, 1869]

C & NW RR: IRON MOUNTAIN STATION (1889)
310 Stephenson Ave.
Iron Mountain

Iron Mountain
16.417240.5074410
Dickinson

The Chicago and Northwestern Railroad extended its line westward from Powers into the newly-discovered iron districts in the Menominee Range in the late 1870's, reaching Quinnesec in 1877 and Iron Mountain in 1880. This passenger station was opened on December 22, 1889. It is a single-story rectangular brick building resting on a finished ashlar foundation, and is 20 feet wide and 75 feet long, with a gabled roof with wide overhanging eaves supported by wooden brackets.
[Iron Mountain News, July 1, 1976, p. 2; PLSMI, XI (1906), p. 48; Dunbar, p. 117]

C & NW RR: Escanaba Roundhouse (c.1869), Escanaba

C & NW RR: IRONWOOD STATION (c.1895)
Between Ayer St. and Frederick St.
Ironwood

Ironwood
15.717320.5148340
Gogebic

This brick passenger station, built in the Romanesque style, consists of two separate buildings connected by a covered passenger platform. Both structures rest on sandstone foundations 5 feet high and have hipped roofs, with overhanging eaves supported by wooden brackets. Beginning at the northeast end of the station, there is a covered passenger platform, 20 feet by 27 feet; the passenger station, 27 feet wide and 90 feet long, with a towerlike two-story portion approximately 25 feet long; a second covered passenger platform, 27 feet wide and 25 feet long; and the brick baggage station, 27 feet wide and 30 feet long.

C & NW RR: STAGER STATION (1890)
Museum Rd., at Museum Park
Caspian

Iron River
16.374310.5102750
Iron

The Chicago and Northwestern Railroad was extended from Florence, Wisconsin into Iron County in the early 1880's as a result of the iron ore discoveries made at that time. The Stager Station, built in 1890, was preserved in 1971 by moving it to the Iron County Museum in Caspian. It is a simple rectangular frame building, 20 feet by 60 feet, with a gabled roof and wide overhanging eaves supported by wooden brackets.

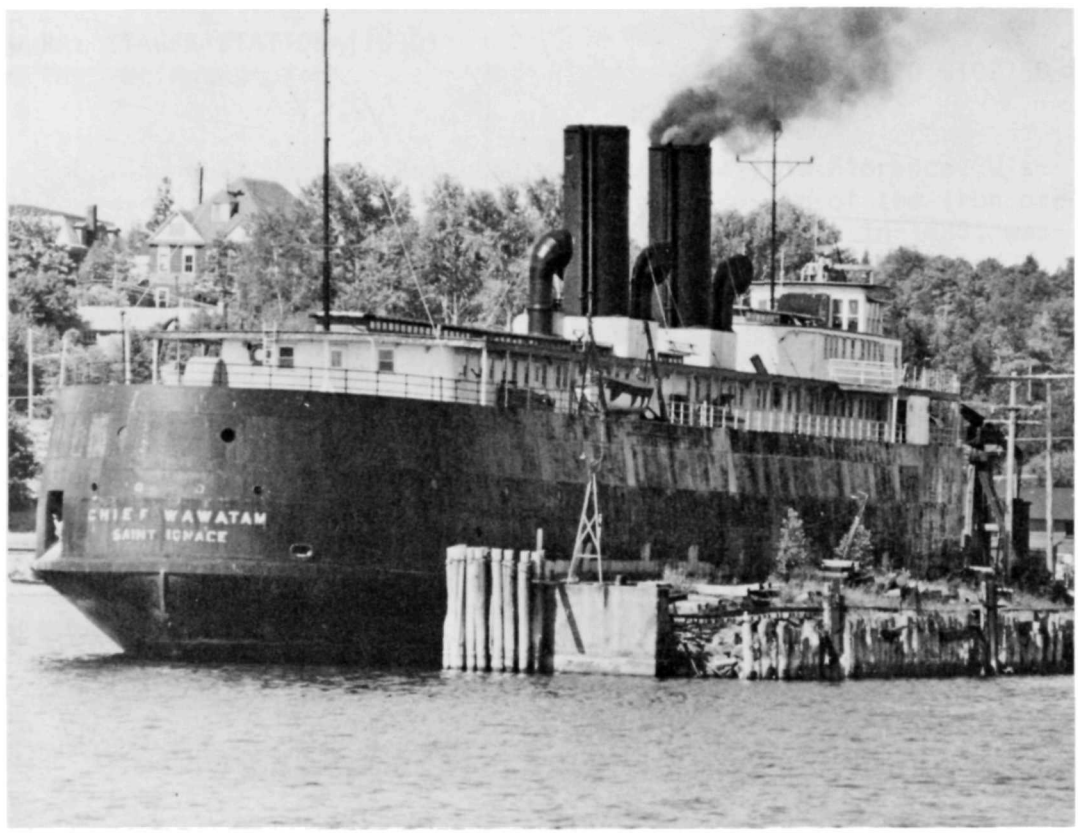
C & NW RR: Iron Mountain Station (1889), Iron Mountain

C & NW RR: Ironwood Station (c.1895), Ironwood

C & NW RR: WATERSMEET ROUNDHOUSE (c.1890)
Roundhouse Rd.
Watersmeet

Watersmeet
16.332010.5126050
Gogebic

The Chicago and Northwestern Railroad built a line through Watersmeet in 1884, and this small town soon became a regional center for the railroad. The roundhouse, constructed of tile blocks, has nine stalls, a roof pitched to the rear of the building, and an interior frame of massive oak beams. It has an inside circumference of 110 feet, an outside circumference of 230 feet, and is 80 feet deep. It is in a badly deteriorating state, suffering the ravages of vandalism, fire, and the elements. The turntable is not extant.
[Knox Jamison, Ewen and the South End Towns (1967), p. 5]



The Chief Wawatam (1911), St. Ignace

THE CHIEF WAWATAM (1911)
S. State St.
St. Ignace

St. Ignace
16.677355.5081480
Mackinac

The Chief is a combination railroad car ferry and icebreaker, built by the Toledo Shipbuilding Company for the Mackinac Transportation Company. She was named after a Chippewa chief who lived in the vicinity of St. Ignace and befriended an English trader in the 1760's. Designed by the naval architect Frank E. Kirby, the Chief is a steel-hulled ship measuring 338.8 feet by 62 feet by 20.7 feet, equipped with six Scotch boilers and three triple expansion engines, 21 inches, 22 inches, and 52 inches by 40 inches, each developing 4,500 horsepower. She has triple

screws, one fore and two aft, and four tracks with a total capacity of 26 cars. The Chief has served as the only railroad connection between the two peninsulas of Michigan and was used for numerous icebreaking missions during the 1940's, as well as for transporting supplies and automobiles across the Straits of Mackinac prior to the opening of the Mackinac Straits Bridge in 1957. In the early 1950's, the Chief was moving more than 30,000 railroad cars per year across the Straits, but this volume had fallen to about 4,000 by 1969. She continues to make one trip per week, with a large subsidy provided by the State of Michigan.
[Frances D. Burgtorf, Chief Wawatam (Petoskey, 1976), pp. 203-207, 272-279; George W. Hilton, The Great Lakes Car Ferries, pp. 61, 259]

COPPER HARBOR LIGHTHOUSE (1866)
E Point of Harbor Entrance
Copper Harbor

Fort Wilkins
16.435200.5258000
Keweenaw

The first lighthouse at Copper Harbor was erected in 1848-1849, but was unsound structurally and was replaced with the present structure in 1866. It was manned until the retirement of lightkeeper Henry Corgan in 1919, when the light was converted to acetylene gas. Then, in 1927, it was replaced with a new light mounted on a 60 foot steel tower in front of the old house. It is now part of Fort Wilkins State Park and has been converted into a small lighthouse museum. The brick light tower, 22 feet high, is an integral part of the rectangular brick keeper's dwelling, 10 feet by 18 feet, with a gabled roof.
[USCG, Light List, p. 123; "Historical Material for the Interpretation of the Copper Harbor Lighthouse, Fort Wilkins State Park," pp. 4-5; NR]

CR RR: HOUGHTON REPAIR SHOPS (1899)
Memorial Ave.
Houghton

Chassell
16.379820.5219540
Houghton

These locomotive repair shops were constructed in 1899 when the Copper Range Railroad completed its original 27 mile line linking Houghton with Winona. The roundhouse has ten stalls remaining out of fifteen originally built. It is a brick building with an inside circumference of 100 feet, an outside circumference of 300 feet, with the stalls each 60 feet deep. Attached to the roundhouse, there is a rectangular brick machine shop, 60 feet wide and 110 feet long. There are also two

adjoining rectangular brick buildings, 20 feet by 100 feet and 30 feet by 60 feet, of different heights, each with its roof pitched to the outside wall. These buildings each have a single large pair of doors and were probably used for repairing rolling stock other than locomotives. The turntable which originally served the roundhouse is no longer extant.
["When the Copper Range Built a Railroad," Copper Range News, IV (January 1964), pp. 1-5]

Copper Harbor Lighthouse (1866), Copper Harbor

CR RR: HOUGHTON STATION (1899)
Memorial Ave.
Houghton

Chassell
16.380580.5219720
Houghton

The Copper Range Company opened a series of new copper mines in the late 1890's at Baltic, Champion, and Trimountain, all south of Houghton, and constructed the Copper Range Railroad from Houghton to Winona, a distance of 27 miles, to serve these new mines. The Houghton Station is an imposing two-story brick building with Jacobsville sandstone used on the corners and over the windows for decoration. It is 30 feet wide, 100 feet long, and has a hipped roof with wide overhanging eaves supported by wooden brackets.
["When the Copper Range Built a Railroad," Copper Range News, IV (January, 1964), pp. 1-5]

D, SS & A RR: CALUMET STATION (c.1910)
Oak St.
Calumet

Laurium
16.389680.5234100
Houghton

This rectangular brick passenger station was built around 1910 by the Duluth, South Shore, and Atlantic Railroad. It is 33 feet wide and 110 feet long, with hipped roofs and overhanging eaves supported by wooden brackets. The center section of the station, 45 feet long, is two stories, while the rest of the building is one story tall.

D, SS & A RR: HOUGHTON STATION (c.1890)
Lake St. and Huron St.
Houghton

Chassell
16.381100.5219810
Houghton

Houghton depended on water connections with the outside world until 1883, when the L'Anse to Houghton segment of the Marquette, Houghton, and Ontonagon Railroad was completed. The Marquette, Houghton, and Ontonagon Railroad then merged in 1886 with the Detroit, Mackinac, and Marquette Railway to form the Duluth, South Shore, and Atlantic Railroad. This handsome passenger station, constructed around 1890, is a rectangular building, measuring 18 feet by 90 feet, with walls of coursed finished sandstone masonry, with a hipped roof and wide overhanging eaves supported by wooden brackets.
[Dunbar, pp. 118-119]

D, SS & A RR: L'ANSE STATION (c.1890)
South of US-41
L'Anse

Keweenaw Bay
16.388070.5178025
Baraga

This rectangular wood-framed passenger station is 15 feet wide and 85 feet long, with a hipped roof and wide overhanging eaves supported by wooden brackets. It includes a two-story segment 60 feet long and a single-story segment 25 feet in length.

D, SS & A RR: MARQUETTE ORE DOCK (1932)
Lake St.
Marquette

Marquette
16.470120.5154000
Marquette

This ore dock was built by the Duluth, South Shore, and Atlantic Railroad to replace a timber dock built in 1905. The single-track approach is a 3,546 foot long steel trestle, most of it at a 1.22 percent grade. The alignment of the approach has two 6 degree curves, the first 368 feet to the right, the second 380 feet to the left, and then one 7 degree curve, 252 feet long to the right. The dock proper is of reinforced concrete construction on a pile foundation and measures 969 feet long, 85 feet 7 inches high, and 67 feet 4 inches wide. There are 150 ore pockets with chutes 36 feet long and 43 feet 3 inches from the hinge hole to the water. This dock has a total storage capacity of 40,000 tons, but has not been used since 1971.
["Historical Sketch of the Marquette Iron Range," compiled by William F. Armstrong, January 25, 1932, Marquette County Historical Society]

D, SS & A RR: MARQUETTE PASSENGER STATION (1902)
Main St.
Marquette

Marquette
16.469850.5154190
Marquette

This passenger station was completed on January 11, 1902 and replaced an earlier passenger station only a few blocks away, surpassing it not only in size but in modern conveniences. The building was steam heated, had electric lights, and was provided with water and sewage connections. The two-story building, 105 feet long and 35 feet wide, was constructed of Port Washington brown sandstone with cut stone trim and a gabled roof covered with slate. The first floor was one large waiting room with four entrances, two on the south and two on the north sides, a

baggage room on the west side, and a ladies retiring room and toilet on the east side. Upstairs were the departments for the superintendent, train dispatcher, and purchasing agent and two rooms set aside for the purchasing agent to live in. For maximum comfort the building supported an 8 foot wide awning around its first floor circumference which protected passengers from inclement weather.
[Marquette Mining Journal, December 28, 1901; MCHS, File on Duluth, South Shore, and Atlantic Railroad; Detroit Free Press, October 5, 1967]

D, SS & A RR: MARQUETTE REPAIR SHOPS (c.1900,1953)
Spring St.
Marquette

Marquette
16.468820.5154340
Marquette

Marquette became a major repair center for the Duluth, South Shore, and Atlantic Railroad, and there was originally an extensive shop complex at this site, including two roundhouses and numerous other buildings. Most of these were torn down in the early 1960's, and all that remains is part of one roundhouse. This wood-framed structure containing fourteen stalls is 80 feet deep, with an inside circumference of approximately 120 feet, and an outside circumference of roughly 350 feet. There is an attached brick stall built in 1953 for diesel locomotives, measuring 66 feet by 72 feet. A steel beam, center-mounted turntable, 75 feet long, resting in a concrete pit, is also extant.

D, SS & A RR: NEWBERRY STATION (1907)
Newberry Ave.
Newberry

Not Available

Luce

Newberry lies on the main line of the Detroit, Mackinac, and Marquette Railway connecting Marquette with St. Ignace, completed in 1881 and then acquired by the Duluth, South Shore, and Atlantic Railroad in 1886. This small town depot measures 20 feet by 60 feet, with a hipped roof and overhanging eaves supported by wooden brackets. It is constructed of red sandstone and rests on a stone foundation, a rare design for a small station in the Upper Peninsula, where wood-framed stations predominate.
[Dunbar, pp. 118-119]

D, SS & A RR: ST. IGNACE
STATION (c.1890)
S. State St.
St. Ignace

St. Ignace
16.677090.5081360
Mackinac

The first rail service into St. Ignace was a line opened by the Detroit, Mackinac, and Marquette Railway in 1881 between St. Ignace and Marquette. The original passenger station built by this line is no longer extant. In 1886, the Detroit, Mackinac, and Marquette Railway merged with the Marquette, Houghton, and Ontonagon Railroad to form the Duluth, South Shore, and Atlantic Railroad, which built this station around 1890. It is a simple rectangular, wood-framed building with a hipped roof, with wide overhanging eaves supported by wooden brackets. It is 20 feet wide and 150 feet long, with the building divided equally into a passenger section and a freighthouse.
[Dunbar, pp. 118-119; Emerson R. Smith, Before the Bridge: A History of St. Ignace (St. Ignace, 1957), p. 66]

D, SS & A RR: SAULT STE. MARIE
ROUNDHOUSE (1888, c.1920)
Eureka St.
Sault Ste. Marie

Sault Ste. Marie South
16.702780.5152090
Chippewa

This roundhouse was built by the Duluth, South Shore, and Atlantic Railroad shortly after it completed its line from Duluth to Sault Ste. Marie in 1887. The roundhouse originally contained forty-five bays and extended a full 180 degrees. There are now only five stalls extant, each 80 feet deep. The remaining portion of the structure has an inside circumference of 75 feet and an outside circumference of approximately 240 feet. It is a wood-framed building, with a roof pitched slightly to the rear. One wall, originally an interior fire wall, is of brick construction. The surviving turntable, 65 feet long, is center-mounted and rests in a concrete-lined pit 5 feet deep. It bears a nameplate which reads, "Philadelphia Turntable Company, No. 330" and probably was built around 1920.
[Dunbar, p. 159]

D, SS & A RR: TROUT LAKE STATION (1907)
Main St.
Trout Lake

Trout Lake
16.652675.5117300
Chippewa

The Duluth, South Shore, and Atlantic Railroad reached Trout Lake in 1887, so this is probably the second passenger station in town. It is a large wood-framed structure which served as a passenger station, freighthouse, and hotel. It consists of four adjoining segments, including two single-story segments, each 35 feet long and 20 feet wide, a two-story section 20 feet square, and another single-story segment, 20 feet by 15 feet.
[Trout Lake Women's Club, A History of the Trout Lake Area (1976), pp. 20-25; Dunbar, pp. 118-119]

EAGLE HARBOR LIGHTHOUSE (1871)
West end of Eagle Harbor
Eagle Harbor

Eagle Harbor
16.412630.5256710
Keweenaw

The Eagle Harbor Lighthouse, built in 1871, consists of an octagonal brick light tower, 40 feet tall and 8 feet in diameter, built into the northeast corner of the lightkeeper's dwelling, a rectangular brick building with a gabled roof, 18 feet wide and 30 feet long. A white stucco facing was added to the tower in 1925 to provide a better day mark.
[USCG, Light List, p. 123; Annual Report of the Lake Carriers' Association (1925), p. 85]

EAGLE RIVER LIGHTHOUSE (1855)
South bank of the Eagle River
Eagle River

Phoenix
16.402090.5251760
Keweenaw

This lighthouse was constructed in 1855, remained in service until 1908, and now serves as a private residence. The keeper's house is a rectangular brick building with a stucco exterior, 15 feet wide and 40 feet long, with a gabled roof. The brick light tower, approximately 40 feet high, is located on the northwest corner of the keeper's dwelling.
[Bessie Phillips and Clarice Strombeck, "Historical Eagle River," p. 3]

THE FAVORITE (1919)
Park Place
Sault Ste. Marie

Sault Ste. Marie South
16.704300.5152800
Chippewa

This steam tug was constructed by the Great Lakes Towing Company in 1919 and replaced an earlier wooden wrecking tug of the same name. She is 173 feet long, 40 feet wide, weighs 393 tons, and has a 1,400 horsepower engine. She was reputed to have been the largest steam tug ever used on the Great Lakes and remained in service until the early 1960's, when she was retired. The Great Lakes Towing Company gave the tug to a non-profit historical corporation in Sault Ste. Marie in 1972, and she will become part of a marine museum when restoration is completed.
[The Ship's Bell, Le Sault de Sainte Marie Historic Sites, p. 3]

GRAND ISLAND EAST CHANNEL
LIGHTHOUSE (1867)
South end of Grand Island
Grand Island

Munising
16.529000.5144070
Alger

The East Channel Lighthouse was built in 1867 to guide ships entering Munising Bay. It was abandoned in 1913 and has badly deteriorated since. It consists of a wooden tower, 5 feet square and approximately 45 feet high, and an adjoining rectangular frame building 20 feet by 25 feet, with a gabled roof, both resting on a stone foundation.
[Beatrice H. Castle, The Grand Island Story (Marquette, 1974), p. 106]

GRAND ISLAND NORTH LIGHTHOUSE (1867)
North end of Grand Island
Grand Island

Wood Island
16.524057.5156000
Alger

There has been a lighthouse at the north end of Grand Island since 1856, when Reuben Smith was appointed keeper. The present structure, built in 1867, consists of a brick light tower, 5 feet square and 25 feet high, and an adjoining rectangular brick keeper's residence with a gabled roof.
[USCG, Light List, p. 117; Beatrice H. Castle, The Grand Island Story (Marquette, 1974), pp. 38, 60, 105; Holland, p. 186; NR]

GRANITE ISLAND LIGHTHOUSE (1869,1902,1906)
Eight miles north of Marquette
Castle Island

Marquette Northwest
16.468520.5174000
Marquette

The Granite Island Lighthouse was built in 1869 at a cost of $20,000. Constructed of grey granite blocks, it is a large two-story structure with 3 foot thick walls and a square light tower rising 89 feet above the lake level. The lightkeepers used the first floor of the building for their living quarters, while the second floor contained their sleeping quarters. In addition, the site includes a boathouse (1902), oil house and seawall (1906), concrete dock, and fog whistle house. At the time this facility was constructed, a large volume of traffic passed between the lighthouse and the shore, but that route was largely abandoned during the 1920's, and the light lost most of its significance for Great Lakes shipping.
[USCG, Light List, p. 119; Daily Mining Journal, September 2, 1926, p. 2; Holland, p. 186]

HOUGHTON COUNTY TRACTION COMPANY
CAR BARN (1900)
Ash St. and Park St.
Hancock

Hancock
16.378620.5221000
Houghton

The Houghton County Traction Company was incorporated in 1900 with a capital of $750,000 and opened its first electric interurban trolley line between Hancock and Wolverine in 1901. This line was later extended to Mohawk, with a spur built between Calumet and Lake Linden. It was reputed to have been the fastest interurban line in the United States when it opened. The service was discontinued in 1935 because of increased use of private automobiles. This large wood-framed car barn consists of three distinct but connected segments: the easternmost segment, fronting on Ethel Avenue, is single-story, with a gabled roof, 40 feet by 75 feet; a middle segment, two stories high, resting on a stone foundation, 75 feet wide and 120 feet long; and the westernmost section, also two-story, 50 feet wide and 100 feet long.
[Sawyer, p. 485; Dunbar, p. 237]

Houghton County Traction Company Car Barn (1900), Hancock

HURON ISLANDS LIGHTHOUSE (1868,1877)
Northeast side of West Huron Island
Huron Islands

Huron Mountain
16.424010.5201035
Marquette

This lighthouse was constructed because of increased traffic between Marquette and the Copper Country during the 1860's. The Lighthouse Board reported at the time that the Huron Islands "are a constant source of anxiety to the navigators, wrecks having frequently occurred at this point." It was built on the highest point of the west island and was lit for the first time on October 28, 1868. The grey granite block keeper's house was the home for three keepers and their families. A

square granite light tower was constructed in 1877, raising the light to 197 feet above the lake level. The original light was a 20,000 candlepower kerosene model which was replaced in 1963 by a 45,000 candlepower electric oscillator light. This facility became fully automated in 1963.
[USCG, Light List, p. 119; Holland, p. 186; NR]

IROQUOIS POINT LIGHTHOUSE (1870,1902)
On Iroquois Point
Bay Mills

Brimley
16.681067.5150030
Chippewa

At Iroquois Point, ship traffic passing from Lake Superior to the St. Mary's Falls Ship Canal (see other entry) had to pass through narrow straits with shoals on the American side and rocky reefs on the Canadian side. The first lighthouse at this point was built in 1855 when the navigation canal at Sault Ste. Marie was opened. This original wooden lighthouse tower was replaced in 1870 by the present brick tower, 65 feet high, 16 feet in diameter at the base, and tapered to 10 feet in diameter at the lantern deck, which is 51 feet high. The attached two-story brick dwelling, with a gabled roof, was built in 1870 and measures 24 feet by 30 feet. An attached addition for an assistant lightkeeper, 12 feet wide and 30 feet long, with a gabled roof, was constructed in 1902. The lighthouse was taken out of service in 1965 and transferred to the United States Forest Service.
[NR]

ISLE ROYALE LIGHTHOUSE (1875)
On Managerie Island
Isle Royale

Isle Royale
16.368050.5311090
Keweenaw

The Isle Royale Lighthouse, constructed in 1875, consists of a white octagonal brick light tower, 61 feet high, and a rectangular coursed sandstone keeper's house approximately 20 feet by 30 feet, with a gabled roof.
[USCG, Light List, p. 134; Holland, p. 186]

Iroquois Point Lighthouse (1870,1902), Bay Mills

JACKSON MINING COMPANY: YANKEE
HAULAGE LOCOMOTIVE (1868)
Seventh St. and M-28
Ishpeming

Ishpeming
16.449400.5148290
Marquette

This vertical boiler steam locomotive was used in the Jackson Mine in Negaunee in 1868-1893 to move the ore cars away from the pithead. It measures 5 feet wide and 14 feet long, with a single boiler 4 feet in diameter and 7 feet high. The upper portion of the boiler is encased in wood and has an attached iron tender box mounted on a wooden platform.

JACOBSVILLE LIGHTHOUSE (1869)
One mile east of Portage Entry
Jacobsville

Keweenaw Bay
16.392045.5203045
Houghton

The Jacobsville Lighthouse, completed in 1869, consists of a light tower and an adjoining keeper's dwelling. The round light tower is 65 feet in height and 10 feet in diameter at the base, tapering to approximately 6 feet in diameter at the top. The keeper's house is a simple one-story rectangular brick building, 25 feet wide and 40 feet long, with a gabled roof.

LS & I RR: ISHPEMING STATION (1898)
Johnson St. and Lake St.
Ishpeming

Ishpeming
16.448510.5148140
Marquette

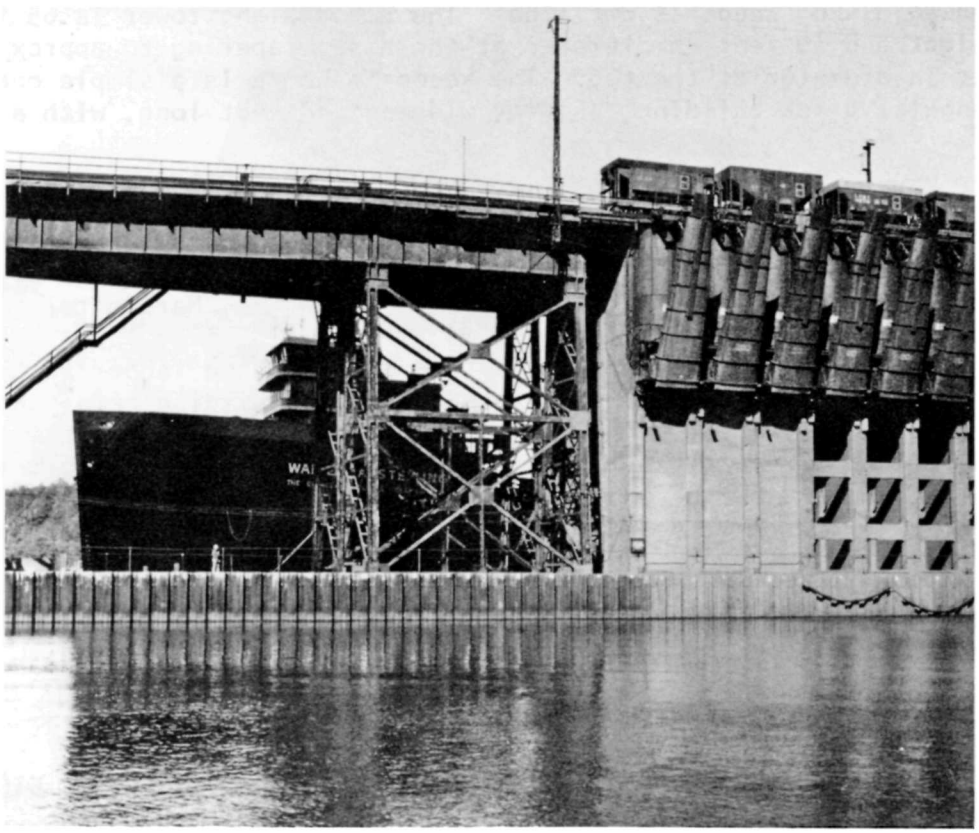
This station was constructed by the Lake Superior and Ishpeming Railroad shortly after it was incorporated, and the building remained in service until 1964. It is a frame structure measuring 24 feet wide and 51 feet long, with a sharply hipped roof and eaves overhanging 6 feet on all sides. There is a passenger platform on the north facade, measuring 13 feet by 138 feet. The interior of the station was divided into three main segments: the ticket office, 9 feet by 25 feet; the men's waiting room, 20 feet by 24 feet; and the women's waiting room, also 20 feet by 24 feet.

LS & I RR: MARQUETTE REPAIR SHOPS (1918-1922)
Lake Shore Blvd., at Presque Isle
Marquette

Marquette
16.469740.5158450
Marquette

The repair complex at this site originally included over twenty buildings, including a twenty stall roundhouse, facilities for thawing frozen iron ore, and elaborate flower beds. The entire complex was designed and built by the Arnold Construction Company of Chicago, with virtually all construction completed in 1918-1922. Most of the complex has been torn down, and the remainder is slated for demolition in the near future. The surviving buildings include the car repair shop, 69 feet wide and 301 feet long; the machine and erecting shop, 115 feet by 142 feet; and a powerhouse, 50 feet by 83 feet by 15 feet high, all of brick construction. In addition, there is a wood-framed sandhouse, 16 feet by 53 feet

by 13 feet tall, and an electric-powered steel turntable, 14 feet wide and 85 feet long, resting in a concrete pit.
[MCHS, No. 385]



LS & I RR: Presque Isle Ore Dock (1912), Marquette

LS & I RR: PRESQUE ISLE ORE DOCK (1912) — Marquette
Presque Isle, at Lake Shore Blvd. — 16.470300.5158280
Marquette — Marquette

This reinforced concrete and steel dock replaced a timber dock built in 1896 and located nearby. The railroad decided in favor of this design because the estimated maintenance savings over a wooden dock

outweighed the higher initial construction costs. The structure was designed by J.F. Jackson, vice president of the Wisconsin Bridge and Iron Company of Milwaukee. His firm erected the steel superstructure, while the reinforced concrete substructure, designed by R.C. Young, the chief engineer of the Lake Superior and Ishpeming Railroad, was built by the Raymond Concrete Pile Company. This was the second reinforced concrete dock built in the United States, completed a year after a similar dock was built by the Great Northern Railway at Superior, Wisconsin. Overall, it is 1,200 feet long, 54 feet wide, and rises 75 feet above the water. There are 200 ore pockets of 250 ton capacity, yielding a total storage capacity of 50,000 tons. Each pocket has a 12 foot center and is equipped with a pair of doors, each 5 feet tall and 3 feet 8 inches wide, opening into a steel chute 35 feet long and weighing 8,200 pounds. The chutes utilized a novel design intended to prevent the ore from sticking to the chute or overflowing its confines. They were designed with curved bottoms and were tapered from 8 feet 6 inches wide at the upper end to 4 feet 6 inches at the lower end, which was inserted into the bulk ore carrier.
["Reinforced Concrete Ore Docks," Engineering News, LXIX (January 1913), pp. 8-13; LS & I RR]

LS & I RR: PRESQUE ISLE ORE DOCK APPROACH (1912)
Presque Isle, at Lake Shore Blvd.
Marquette

Marquette
16.469825.5158610
Marquette

The approach to the Lake Superior and Ishpeming Railroad Ore Dock (see other entry) was designed by the railroad's chief engineer, R.C. Young, with virtually all work carried out by railroad employees. It consists of an earth embankment one mile long, with a one and one-half percent grade, connected to the dock by a steel trestle 600 feet long and 70 feet in height. The base of the embankment was constructed by the Zenith Dredge Company of Duluth, Minnesota, using the material dredged from the harbor to form the slips for the dock. This base utilized approximately 100,000 cubic yards of hydraulically-filled dredgings. Work on the embankment proper began on April 3, 1911 and was completed on January 15, 1912. Crews moved a total of 503,000 cubic yards of sand from a pit one and one-half miles away, using trains of 25 side-dump cars.
["Building a Large Railway Embankment," Engineering News, LXIX (February 1913), p. 299; LS & I RR]

LS & I RR: PRESQUE ISLE STATION (1896)
Lake Shore Blvd.
Marquette

Marquette
16.470290.5158630
Marquette

This attractive passenger station was opened in 1896 and has served as an important transfer point between the railroad and the trolley system of Marquette, particularly for Marquette residents who worked in the mines in Ishpeming. This one-story frame structure is 25 feet wide and 50 feet long, with a sharply pitched hipped roof. The station was moved approximately 200 feet to its present site in 1963, when it was sold to the Marquette and Huron Mountain Railroad, which operates the station as a restaurant.
[LS & I RR; Boyer, Program 377]

LS & I RR: Presque Isle Station (1896), Marquette

LS & I RR: Steam Locomotive Number Nineteen (1910), Marquette

LS & I RR: STEAM LOCOMOTIVES (1906,1910,1916) Marquette
Two miles west of Presque Isle 16.467860.5158480
Marquette Marquette

This set of eight vintage steam locomotives was used by the Lake Superior and Ishpeming Railroad for its lucrative Ishpeming-Presque Isle route linking the iron mines of the Marquette Range with the railroad's dock facilities. They were retired after World War II when diesels were placed into service and were sold to the Marquette and Huron Mountain Railroad, essentially a tourist operation, in 1963. The oldest was built in 1906 by the American Locomotive Works and is a 2-8-0 locomotive, class SC-3, measures 69 feet long with tender, 10 and one-half feet wide,

and weighs 218 tons. Another six were built in 1910 by the American Locomotive Works and also have 2-8-0 wheel configurations. These all weigh 168 tons when fully loaded and are 66 feet long and 10 feet wide. Finally, there is another 2-8-0 locomotive, class SC-1, 72 feet long and 10 and one-half feet wide, weighing 221 tons, constructed in 1916 by the Baldwin Locomotive Works.

THE LOUIS W. HILL [S.S. VALLEY CAMP] (1917)
Park Place
Sault Ste. Marie

Sault Ste. Marie South
16.704420.5152800
Chippewa

This Great Lakes bulk carrier was built by the American Shipbuilding Corporation in Lorain, Ohio. She was originally named after the railroad magnate Louis W. Hill of the Great Northern Railroad, but she was renamed the Valley Camp in 1955. She was owned by the Hanna Mining Company, then the Wilson Marine Transit Company, and finally, the Republic Steel Corporation, which retired the ship in 1968 and then sold her in 1970 for use as a marine museum by a Sault Ste. Marie historical corporation. During her career, the Louis W. Hill carried over 16.5 million tons of cargo, traveling more than three million miles on the Great Lakes. Overall, she is 550 feet long, 58 feet wide, with a carrying capacity of 7,030 tons gross, and 5,648 tons net. She has a keel of 525 feet, a draft of 31 feet, and a water draft of 19.7 feet. A triple expansion steam engine developing 1,800 horsepower and fired by Scotch boilers operating at 180 pounds drove a four-bladed propeller. The normal service speed was 10 knots, and she carried a crew of 32 officers and men.
[NR]

MANISTIQUE EAST BREAKWATER
LIGHTHOUSE (1915)
End of East Breakwater
Manistique

Not Available

Schoolcraft

This is a brick lighthouse sheathed with riveted cast iron plates, 12 feet square at the base, tapered to approximately 8 feet square at the top, and standing 35 feet high. The tower rests on a square concrete crib rising 15 feet above the water level, placing the light 50 feet above the Lake Michigan water level.
[USCG, Light List, p. 174]

MARQUETTE HARBOR BREAKWATER (1894)
Marquette Harbor
Marquette

Marquette
16.471000.5153480
Marquette

Marquette was the shipping point for about half of the iron ore produced on the Marquette Range during the last quarter of the nineteenth century, making Marquette Harbor one of the busiest ports on Lake Superior. The Army Corps of Engineers initially planned to build a breakwater 2,000 feet long in 1890, but they completed a 3,000 foot structure in 1894 at a cost of $232,936. After an addition of 1,500 feet was made in 1910, this breakwater gave the harbor a protected area of 360 acres. The design of the structure was considered a radical departure from past practice. This concrete wall drops vertically on the harbor side, but on the lake side it has a stepped configuration, with two parallel slopes at a 45 degree angle to the water, with a banquette 8 feet wide and elevated 6 feet above the mean lake level, and a parapet 6 feet wide, with an elevation of 10 feet above the water level.
[Sawyer, p. 417; Boyer, Program 90; Annual Report of the Chief of Engineers on Civil Works Activities, United States Army Corps of Engineers, St. Paul District, pp. 27-29]

MARQUETTE HARBOR LIGHTHOUSE (1866,1906)
E. Arch St.
Marquette

Marquette
16.471265.5154630
Marquette

The first permanent lighthouse at Marquette was built in 1855, when navigation increased significantly as a result of the opening of the St. Mary's Falls Ship Canal (see other entry) at Sault Ste. Marie. The present brick lighthouse was constructed in 1866, with a second story added to the lightkeeper's dwelling in 1906. This rectangular brick building measures 30 feet by 55 feet, with a square brick light tower 40 feet high, and the light 77 feet above the lake level. It was originally equipped with a kerosene lamp which was turned by a system of weights suspended on chains in the light tower, much like the system of weights used in a wall clock. This light was replaced in 1908 by a second order incandescent oil vapor lamp approximately ten times brighter than the previous light. A fog signal was also installed at that time. Today, the lighthouse is equipped with a modern 300,000 candlepower electric light.
[USCG, Light List, p. 118; Daily Mining Journal, May 22, 1965, p. 6; Holland, p. 186; Annual Report of the Lake Carriers' Association, 1908, pp. 70, 74]

Marquette Harbor Lighthouse (1866,1906), Marquette

M, H & O RR: NEGAUNEE STATION (1880)
Gold St.
Negaunee

Palmer
16.453080.5149350
Marquette

This building replaced an earlier passenger station which burned in October 1879. It is a rectangular frame building, 22 feet wide and 90 feet long, with a gabled roof and wide overhanging eaves. This combination passenger and freight facility contained an American Express office, an agent's office, as well as a passenger waiting room and a freight storage area.
[Marquette Weekly Mining Journal, November 22, 1879, p. 8; Marquette Weekly Mining Journal, January 3, 1880; Dunbar, p. 119]

M & O RR: DOCK OFFICE (1872)
120 E. Main St.
Marquette

Marquette
16.469940.5154160
Marquette

This building was constructed in 1872 as a dock office for the Marquette and Ontonagon Railroad Company, which was eventually absorbed by the Duluth, South Shore, and Atlantic Railroad in 1890. Since 1941, the structure has housed offices for various business concerns. The building is constructed of stone with a gabled iron roof and measures 30 feet by 40 feet by 16 feet high.
[MCHS, No. 49.6; "William T. Armstrong Pamphlet," Marquette County Historical Society; Duluth, South Shore, and Atlantic Railroad Company Valuation Book 1911, Marquette County Historical Society]

M & SE RW: BIG BAY STATION (1905)
County Rte. 550
Big Bay

Big Bay
16.444045.5184090
Marquette

The Marquette and Southeastern Railway built a line from Big Bay to Lawson in 1905 and constructed this station then. The firm merged with the Munising Railway Company in 1911, and this line was in turn acquired by the Lake Superior and Ishpeming Railroad in 1923. The building was moved about 200 feet during the 1940's to provide additional space for Henry Ford's Thunderbay Inn. The station was in service sporadically until 1963 and now serves as a private residence. It is a two-story frame structure with a hipped roof, 76 feet long and 17 feet wide. The second floor originally served as the living quarters for the agent, while the first floor contained the waiting rooms and an office.
[LS & I RR]

M & SE RW: MARQUETTE FREIGHT STATION (1900)
205 N. Lake St.
Marquette

Marquette
16.470100.5154380
Marquette

This freight station was built by the Marquette and Southeastern Railway in 1900 and remained in service until 1965, when the Lake Superior and Ishpeming Railroad, the owner since 1923, discontinued freight service. This building is still used for general storage. It is a single-story frame structure, with a gabled roof and eaves which

overhang 8 feet, and is fitted with eight sliding doors, each 15 and one-half feet wide and 7 and one-half feet high. Overall, it is 40 feet wide, 128 feet long, and 12 feet high.
[LS & I RR]

M & SE RW: Big Bay Station (1905), Big Bay

M & SE RW: MARQUETTE STATION (1874,1886)
S. Lake St.
Marquette

Marquette
16.470000.5154260
Marquette

The Lake Shore Engineering Company constructed this building in 1874, with an addition made in 1886, and used it for the manufacture of mining

machinery until 1907, when they moved to a new location (see other entry). The Marquette and Southeastern Railway acquired the property in 1908, converting it into a passenger station and general offices. This two-story brick building has two wings, one measuring 46 feet by 338 feet and the other 46 feet by 104 feet.
[LS & I RR; Marquette Mining Journal, January 11, 1908, pp. 1, 5; Boyer, Program 69]

MELLON LUMBER COMPANY
LOCOMOTIVE NUMBER SIX (1916)
Lakeshore Rd.
Ontonagon

Ontonagon
16.323047.5193020
Ontonagon

This 2-6-2 Baldwin steam locomotive has had a long and colorful association with the logging and paper industries of Wisconsin and the Ontonagon region in upper Michigan. It was originally used in logging and lumber operations in the Mellon, Wisconsin area by the Mellon Lumber Company. A series of successor companies gradually moved their operations and this locomotive into Michigan, until the Northern Logging Company moved it to Ontonagon in 1935. The National Container Company bought it from the Northern Logging Company in 1948 and converted it into a switch engine for the plant railroad yards in Ontonagon. It served in this capacity until 1953, when this plant closed. Finally, it was restored and repainted in 1964 and has been displayed in front of the plant since then.
[Ontonagon Herald, November 21, 1963]

MENOMINEE NORTH PIERHEAD
LIGHTHOUSE (1877,1927)
At the end of the North Pier
Menominee

Marinette
16.453092.4993073
Menominee

This lighthouse consists of an octagonal tower 25 feet high and 15 feet wide, sheathed with riveted cast iron plates, added in 1927. It rests on a rectangular concrete base, 20 feet by 25 feet, and 12 feet high, which in turn rests on a circular concrete crib 40 feet in diameter.
[USCG, Light List, p. 179]

Mellon Lumber Company Locomotive Number Six (1916), Ontonagon

M, SP & SSM RR: GLADSTONE
ROUNDHOUSE (c.1890)
Railway Ave.
Gladstone

Gladstone
16.497067.5077000
Delta

The Minneapolis, St. Paul, and Sault Ste. Marie Railroad built its main line linking Minneapolis and Sault Ste. Marie in 1884-1887, arriving in Gladstone in 1887. This roundhouse, built shortly thereafter, originally had twenty-two stalls, but twenty of these were torn down in the mid-1960's. Two stalls remain, each 90 feet deep, with 12 foot wide doors. Overall, this brick building measures 24 feet by 90 feet

by 48 feet, and has a roof pitched to the rear. Nearby there is a turntable, of the center-mounted type, 12 feet wide and 90 feet long. [Dunbar, p. 159]

M, SP & SSM RR: Gladstone Station (1887), Gladstone

M, SP & SSM RR: GLADSTONE STATION (1887)
Railway Ave.
Gladstone

Gladstone
16.497055.5076056
Delta

This passenger station was built when the Minneapolis, St. Paul, and Sault Ste. Marie Railroad reached Gladstone in 1887. It is a two-story

rectangular wood-framed building with a gambrel roof, 30 feet wide and 100 feet long.
[Dunbar, p. 159]

M, SP & SSM RR: LOCOMOTIVE NUMBER 730 (1911)
Railway Ave.
Gladstone

Gladstone
16.497067.5077000
Delta

This locomotive was built by the American Locomotive Company of Schenectady, New York in 1911 and was used exclusively for passenger trains operated by the Minneapolis, St. Paul, and Sault Ste. Marie Railroad until 1960, when it was retired and donated to the city of Gladstone. It traveled approximately 3.6 million miles during its career. It is a 4-6-2 locomotive, 45 feet long, weighing 247 tons, with 25 inch by 26 inch cylinders and 75 inch drivers.

M, SP & SSM RR: RAPID RIVER STATION (c.1890)
Ackley St.
Rapid River

Rapid River
16.502035.5085000
Delta

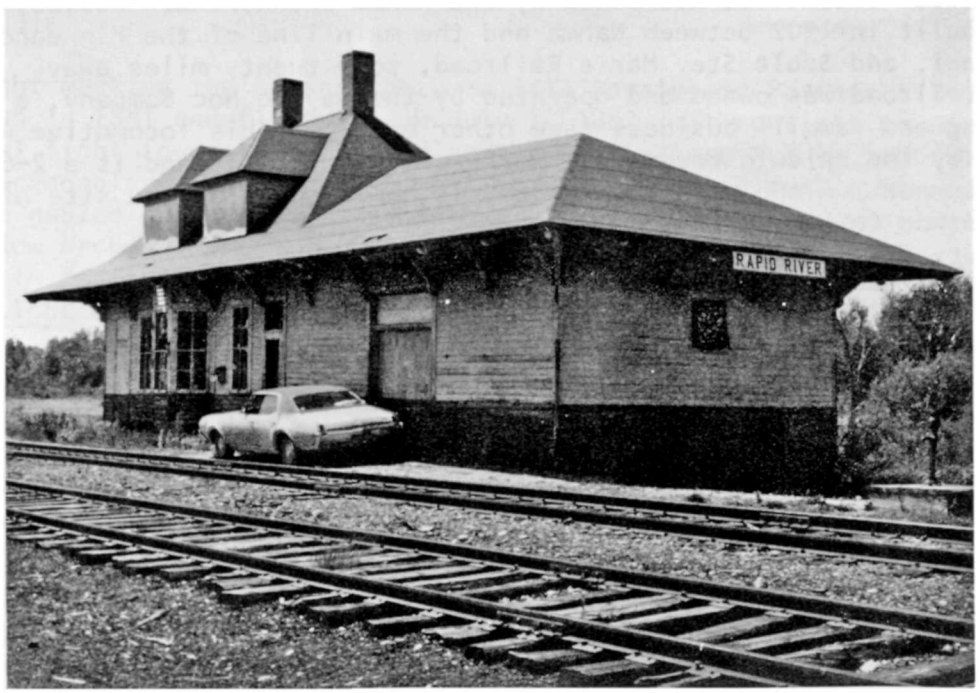
The Minneapolis, St. Paul, and Sault Ste. Marie Railroad completed most of its line to Sault Ste. Marie between 1884 and 1887, and this small passenger-freight station was probably built shortly thereafter. It is a simple rectangular frame building, with a bay window, a hipped roof with overhanging eaves supported by wooden brackets, and measures 25 feet wide and 60 feet long.
[Dunbar, p. 152]

MUNISING RANGE FRONT LIGHTHOUSE (1909)
604 W. Munising St.
Munising

Munising
16.526000.5140000
Alger

This conical brick tower, sheathed in riveted cast iron plates, was built in 1909. It is 12 feet in diameter at the base, tapered to about 10 feet in diameter at the top, and stands 58 feet high, with the light 79 feet above the lake level. The construction of this range light,

along with the rear range light (see other entry), permitted large vessels to use Munising Harbor as a place of refuge during northerly storms on Lake Superior.
[USCG, Light List, p. 117; Annual Report of the Great Lakes Carriers' Association, 1908, pp. 69-70]



M, SP & SSM RR: Rapid River Station (c.1890), Rapid River

MUNISING RANGE REAR
LIGHTHOUSE (1909)
End of Hemlock St.
Munising

Munising
16.525085.5139075
Alger

This light, along with the Munising Range Front Light, assists ships on Lake Superior to fix their positions. It stands 1,150 feet from the front light. It is a conical tower 8 feet in diameter at the base, standing 33 feet above the ground, but 107 feet above the Lake Superior water level.
[USCG, Light List, p. 117]

N & N RW: LOCOMOTIVE NUMBER 38846 (1912)
County Rte. 497
Nahma Township

Garden
16.526010.5075010
Delta

This steam locomotive was owned by the Nahma and Northern Railway, a line built in 1902 between Nahma and the main line of the Minneapolis, St. Paul, and Sault Ste. Marie Railroad, some twenty miles away. This tiny railroad was owned and operated by the Bay De Noc Company, a logging and sawmill business (see other entry). This locomotive was built by the Baldwin Locomotive Works of Philadelphia and is a 2-6-2 coal burner. Along with its tender, it now rests near the site of the Bay De Noc Company mills.
[Sawyer, p. 378]

NEGAUNEE UNION STATION (1910)
Gold St. and Rail St.
Negaunee

Palmer
16.453000.5149350
Marquette

This station was built in 1910 by the Hood Contracting Company and opened in December of that year. It is a one-story pressed brick building with a hipped asbestos shingle roof resting on a concrete foundation. Inside was the general waiting room, 53 feet by 15 feet, a baggage room, 21 feet by 20 feet, Western Express and American Express offices each 17 feet by 11 feet, and a women's waiting room, 15 feet 6 inches by 21 feet. It served the Duluth, South Shore, and Atlantic Railroad and the Chicago and Northwestern Railroad until its closing in 1965.
[Daily Mining Journal, July 16, 1965; Daily Mining Journal, December 23, 1910]

ONTONAGON LIGHTHOUSE (1866,1890)
South bank of the Ontonagon River
Ontonagon

Ontonagon
16.323030.5193050
Ontonagon

The Ontonagon Lighthouse was originally built in 1855 and was the second lighthouse on the southern shore of Lake Superior. The present lighthouse, built in 1866, was moved 865 feet in 1884 from the shoreline to the end of the west pier extension at the mouth of the Ontonagon River. It remained in service until 1964, at which time the light was removed and presented to the Ontonagon County Historical Society. The lighthouse is a rectangular brick building with a square tower 26 feet high at its west facade. In 1890, an 18 foot square one-story brick kitchen was added to the east facade of the building.
[NR]

PASSAGE ISLAND LIGHTHOUSE (1882)
Passage Island
Isle Royale

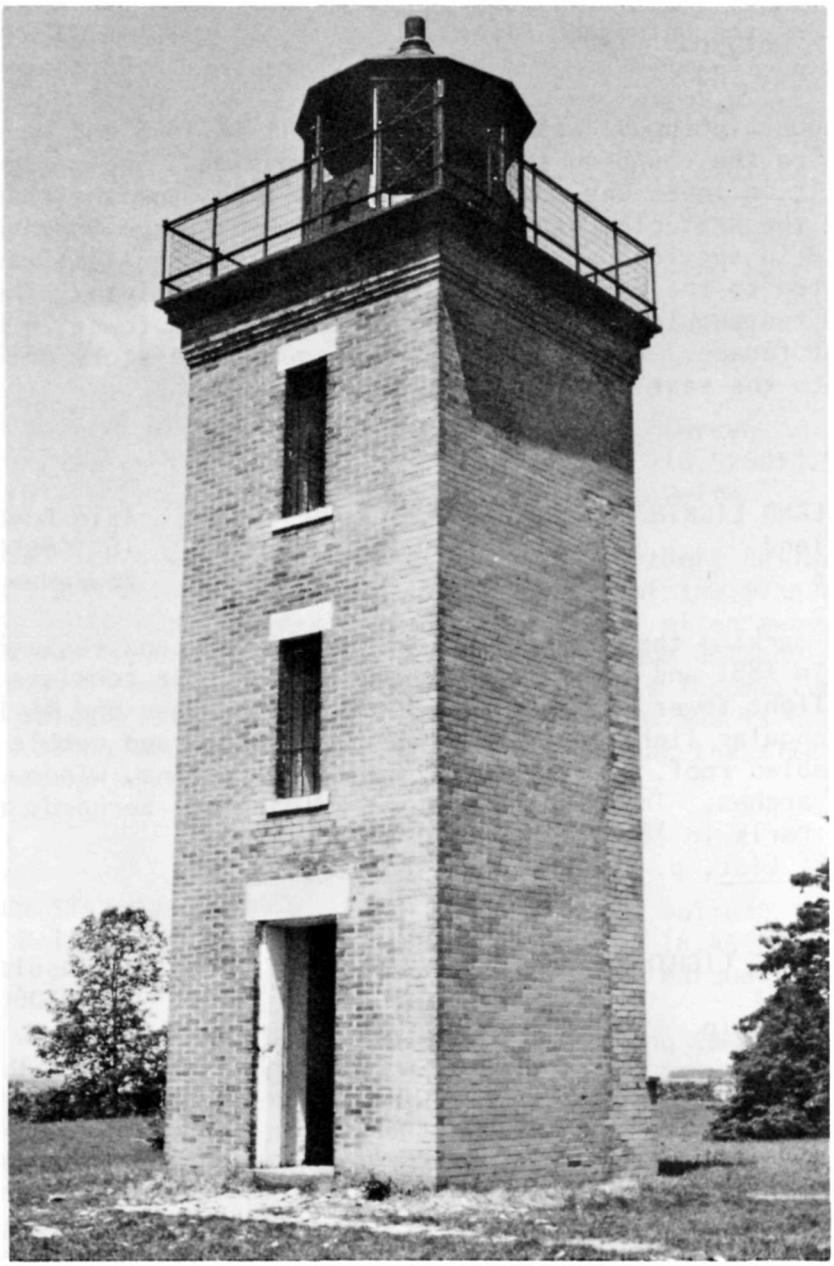
Isle Royale
16.398050.5241075
Keweenaw

This light marking the passage between Isle Royale and Passage Island was begun in 1881 and first lit on July 1, 1882. It consists of an octagonal light tower, 8 feet in diameter at the base and 44 feet tall, and a rectangular lightkeeper's dwelling, with coursed rubble masonry walls, a gabled roof, and red sandstone corner quoins, window sills, and window arches. The light was built by Barbier, Bernard, and Turenne in Paris in 1880.
[USCG, Light List, p. 135; Holland, p. 187]

PENINSULA POINT LIGHTHOUSE (1865)
Peninsula Point
Peninsula Township

Peninsula Point
16.502060.5057000
Delta

The Peninsula Point Lighthouse was originally built in 1865 and consisted of a one and one-half story residence, measuring 29 feet by 27 feet, at the south end of which stood a 40 foot tall light tower. The dwelling was destroyed by fire in 1959. Three years later, the light tower was repaired when the brick work on its north side (where the intense heat of the fire had damaged the mortar) was pointed and faced with new brick. The structure originally contained an oil lamp which was replaced by an automatic acetylene light in 1922. The light



Peninsula Point Lighthouse (1865), Peninsula Township

continued to function until 1936 when the Minneapolis Shoal Lighthouse was placed in operation. The tower is all that remains, with its cast iron spiral staircase leading to the lantern deck.
[Escanaba Daily Press: August 1, 1931; December 31, 1948; May 10, 1949; August 7, 1949; November 14, 1949; September 19, 1962; NR]

PORTAGE LAKE LOWER ENTRANCE LIGHT (1930) — Keweenaw Bay
End of the breakwater — 16.391015.5202050
White City — Houghton

There has been a lighthouse at the entrance to Portage Lake since 1856, but this structure was constructed in 1930. It consists of an octagonal steel tower 31 feet tall and 8 feet in diameter, resting on a 20 foot square concrete base 15 feet high, which in turn rests on a 30 foot square concrete base 15 feet tall set on a concrete crib extending below the water level.
[USCG, Light List, p. 119; Annual Report of the Lake Carriers' Association, 1930, p. 182]

PRESQUE ISLE HARBOR BREAKWATER (1926,1935) — Marquette
Presque Isle Harbor — 16.471000.5158200
Marquette — Marquette

The first breakwater in Presque Isle Harbor was built in 1896, when the Lake Superior and Ishpeming Railroad constructed its first iron ore dock there (see other entry). It was constructed of timber cribwork filled with stones and extended 1,000 feet into the harbor. In 1902, a shore extension 216 feet long was added. The present structure was built in 1926 to replace the original breakwater, and it consists of a series of concrete slabs, all 4 feet thick, forming a foundation 17 feet wide, topped by a wall with two sloping sides with a parapet 4 feet wide. The breakwater was extended an additional 1,600 feet in 1935 with the construction of a rubble wall resting on a concrete slab foundation. The Lake Superior and Ishpeming Railroad moved 214,000 tons of rock from their Big Bay Road Quarry a mile away for this extension.
[Boyer, Program 295; United States Army Corps of Engineers, St. Paul District, Annual Report of the Chief of Engineers on Civil Works Activities, 1976, p. 27; USCG, Light List, p. 118]

Q & TL RR: LOCOMOTIVES NUMBERS ONE AND FIVE (1889,1891)
East of US-41
Quincy

Hancock
16.380720.5221220
Houghton

These two steam locomotives were used on the Quincy and Torch Lake Railroad, built in 1890 by the Quincy Mining Company to link their mines with their stamping mill on Torch Lake. Locomotive Number One is a 2-6-0, with 42 inch drive and 15 inch by 20 inch cylinders, built by the Brooks Locomotive Works in 1889 (Number 1535) and named the "Thomas F. Mason" when it went into service on the Quincy and Torch Lake Railroad. The second locomotive at this site is Baldwin Locomotive Number 11534, a 2-8-0 with 37 inch drive and 16 inch by 20 inch cylinders, built in 1891 for the Hancock and Calumet Railroad, but acquired in 1908 by the Quincy and Torch Lake Railroad. It became their Locomotive Number Five.
[Stevens, I (1900), p. 224; John Campbell, "Locomotives of the Quincy and Torch Lake Railroad," Narrow Gauge and Short Line Gazette, May 1976, pp. 22-27]

ROCK OF AGES LIGHTHOUSE (1908)
West end of Isle Royale
Isle Royale

Isle Royale
16.326085.5303090
Keweenaw

This lighthouse was built to help guide ships which travel north of Isle Royale, in the lee of the island, where the passage is considerably smoother in rough weather. Construction began in June 1907 and was completed in the autumn of 1908. The lighthouse went into service on October 22nd, with a temporarily fixed third order red light in place, along with a first class 6 inch siren driven by compressed air. A permanent second order light, which flashed every ten seconds and had a normal range of twenty-one miles, was installed in 1910. This lighthouse is the most powerful on the Great Lakes, with lights rated at 4.5 million candlepower. The brick light tower is 87 feet tall, 30 feet in diameter at the base, and tapered to about 15 feet in diameter at the lantern deck. It rests on a cylindrical steel foundation pier 50 feet in diameter and 30 feet high, placing the light 117 feet above the lake level.
[USCG, Light List, p. 133; Holland, p. 187; Annual Report of the Lake Carriers' Association, 1908, p. 71]

ROCK HARBOR LIGHTHOUSE (1855)
Middle Islands Passage
Isle Royale

Isle Royale
16.382045.5327015
Keweenaw

The Rock Harbor Lighthouse was constructed in 1855 at a cost of $5,000, but was used only until 1858. It lay abandoned until Congress appropriated an additional $5,000 in the early 1870's. It was used again in 1874-1879 and then permanently taken out of service. Camping parties from Duluth used it for several years, and it was occupied periodically until 1939. The tower began to tilt noticeably in the early 1950's, but was stabilized through an emergency National Park Service restoration project begun in 1962, which included pumping cement under pressure into the decaying gravel foundation. The round brick light tower is 10 feet in diameter at the base and 50 feet high, while the nearby lightkeeper's house is a rubble masonry building, two stories high and 29 feet square, with a gabled roof.
[Holland, p. 186; NR]

ROUND ISLAND LIGHTHOUSE (1895)
Northwest corner of Round Island
Round Island

Round Island
16.685080.5078520
Mackinac

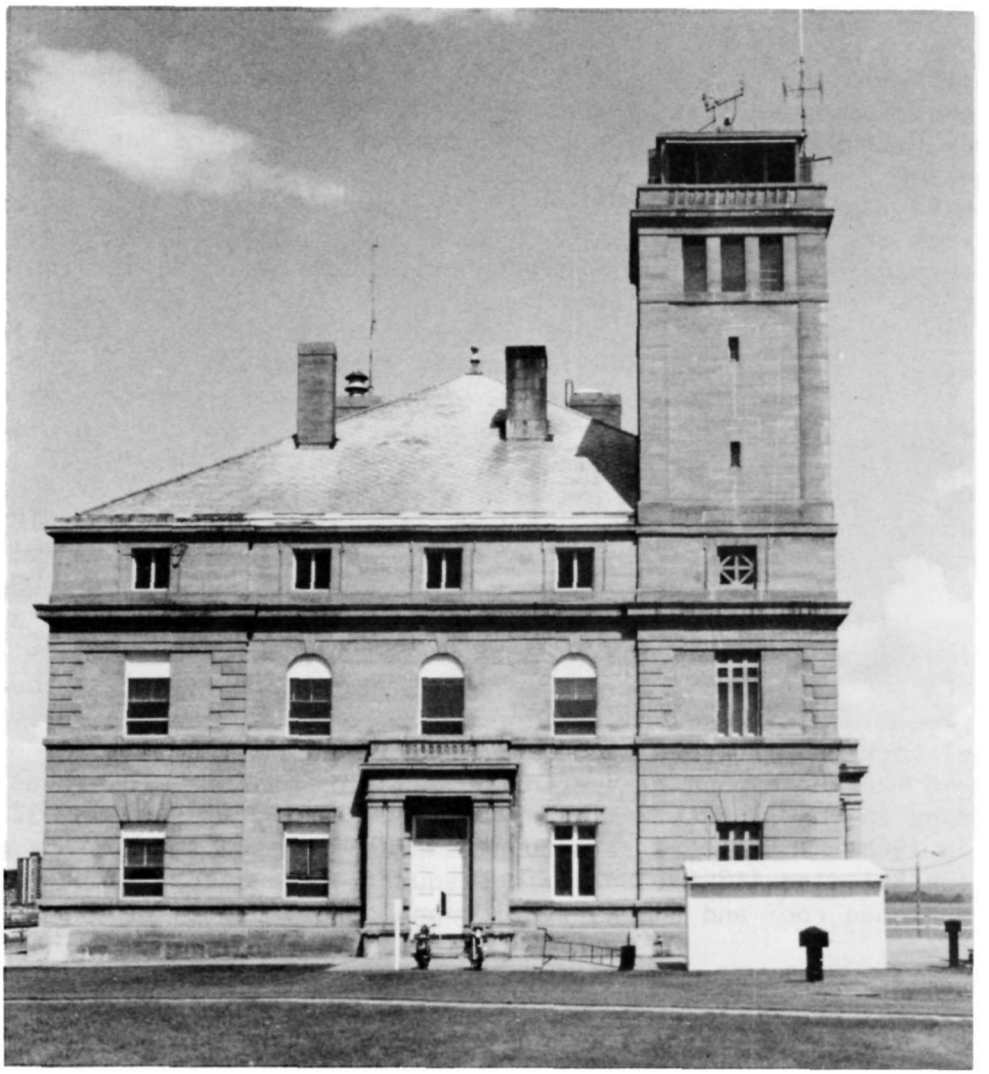
This lighthouse was constructed in 1895 to help guide ships passing through the northern channel of the Straits of Mackinac between Round Island and Mackinac Island. When the light was automated in 1924, the number of keepers was reduced from three to one. It was unmanned from 1947 until its abandonment in 1958. It is a three-story brick structure, 31 feet by 30 feet, with a 12 foot square tower in the northeast corner rising to a height of 53 feet. The entire structure rests on a concrete crib, 40 feet square, faced with brick. There has been extensive damage to both the interior of the building and to the breakwater since its abandonment, but efforts are now underway to stabilize and ultimately restore the structure.
[NR]

THE ST. MARY'S (1917)
Park Place
Sault Ste. Marie

Sault Ste. Marie South
16.704300.5152800
Chippewa

This boat was used by the United States Army Corps of Engineers as quarters for its employees while they were working at isolated work sites. She has been stationed at Sault Ste. Marie during her entire history. She consists of a two-story wood-framed house with a flat roof resting on a steel barge, which is 100 feet long and 30 feet wide. This boat was acquired by a non-profit historical corporation in 1972 and will be restored and made part of a marine museum.
[The Ship's Bell, Le Sault de Sainte Marie Historic Sites, p. 3]

The St. Mary's (1917), Sault Ste. Marie

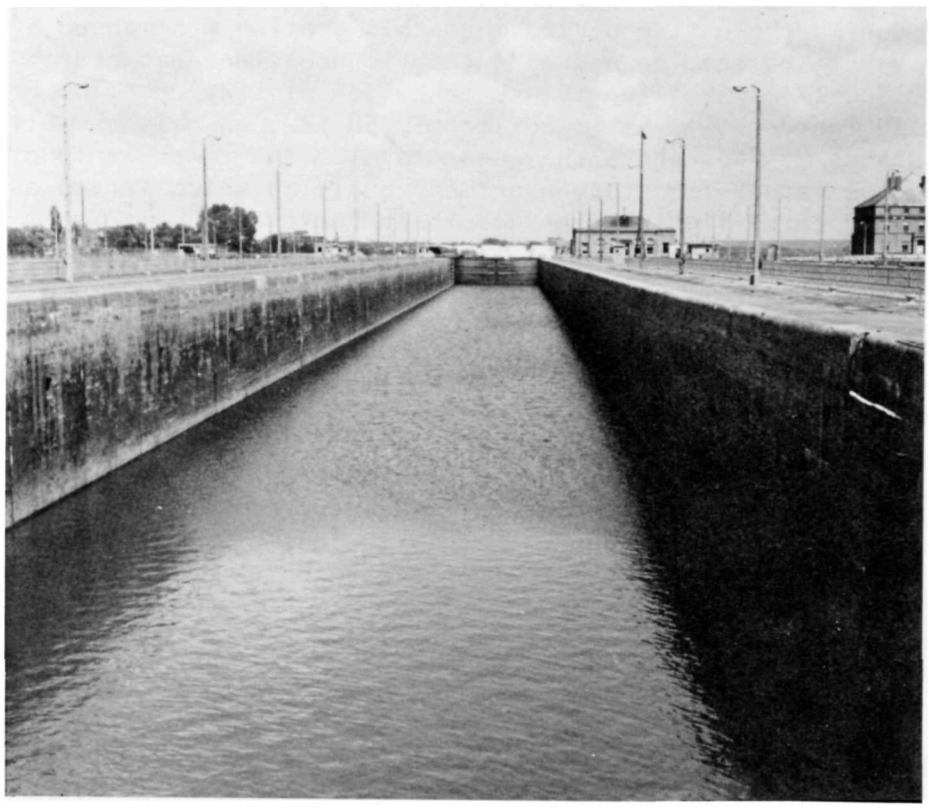


St. Mary's Falls Ship Canal: Administration Building (1896), Sault Ste. Marie

ST. MARY'S FALLS SHIP CANAL
[SOO LOCKS] (1855-1968)
On the St. Mary's River
Sault Ste. Marie

Sault Ste. Marie South
16.703455.5153150
Chippewa

The St. Mary's Falls Ship Canal, more commonly called the "Soo Locks," enables shipping to pass around the St. Mary's Rapids and thus travel between Lake Superior and the other Great Lakes. There has been a navigation lock at this general location since 1797, when the Northwest Fur Company built a 38 foot lock on the Canadian side of the river. That lock was destroyed during the War of 1812 by American troops, and there was no navigation canal until 1855, when the State of Michigan, with Congressional assistance, opened up the State Lock, which was 350 feet long, 70 feet wide, and had two lock chambers, each with a lift of 18 feet. In 1881, the State of Michigan transferred ownership of the canal to the United States Government, which placed it under the control of the United States Army Corps of Engineers, which still administers the canal today. A second lock, the Weitzel, measuring 515 feet long and 80 feet wide, was built in 1870-1881. As the size of ships has increased, the locks have undergone numerous changes. In 1887-1896, the original State Lock was removed and replaced by the Poe Lock, 800 feet long and 100 feet wide. The next major change took place when two new locks, the Davis (1907-1914) and the Sabin (1911-1919) were added, bringing the total number of operating locks to four. The Davis and Sabin Locks, the oldest remaining on this site, are identical, measuring 1,350 feet long, 80 feet wide, and 23.1 feet deep. More recently, the Weitzel Lock (1881) was replaced in 1943 by the MacArthur Lock, 800 feet long, 80 feet wide, and 31 feet deep, and the Poe Lock (1896) was replaced by the New Poe Lock measuring 1,200 feet by 110 feet by 32 feet deep in 1968. The oldest structure remaining on the site is the Administration Building (1896), an 80 foot square, three-story stone building, with a hipped roof and an observation and control tower on its southwest corner.
[Otto Fowle, Sault Ste. Marie and Its Great Waterway (New York, 1925), pp. 431-446; Charles Moore, The St. Mary's Falls Canal (Detroit, 1907), passim.]



St. Mary's Falls Ship Canal: Davis Lock (1914), Sault Ste. Marie

SAND HILLS LIGHTHOUSE (1919) — Phoenix
Five Mile Point — 16.396580.5249410
Sand Hills — Keweenaw

The shoals located off Eagle River had caused many shipwrecks, but the Eagle River Lighthouse (see other entry) was located too far from the beach to offer adequate warning, and it was discontinued in 1908. Then, in 1910, the ore carrier William C. Moreland was stranded on these shoals. The Sand Hills Light and Fog Signal Station, located at Five Mile Point, was built in 1917-1919 at a cost of $100,000 and with great difficulty, since all materials had to be brought to the site by barge. It originally had an oil vapor lamp mounted in a fourth order bulls-eye

lens and was visible for eleven miles. William Richard Bennetts was the keeper during the entire period that this station was manned, from 1919 until 1939. The station had an automatic acetylene gas beacon operating from 1939 until 1954, when it was taken out of service. The bright light tower, 10 feet square, is approximately 50 feet in height, while the light stands 91 feet above the water level. The tower is located in the middle of a large, two-story apartment building which served as the residence for three lightkeepers and their families.
[H. Donald Bliss, "The Story of Sand Hills Light," (1960), p. 1]

SAND POINT LIGHTHOUSE (1878)
On Sand Point
Baraga

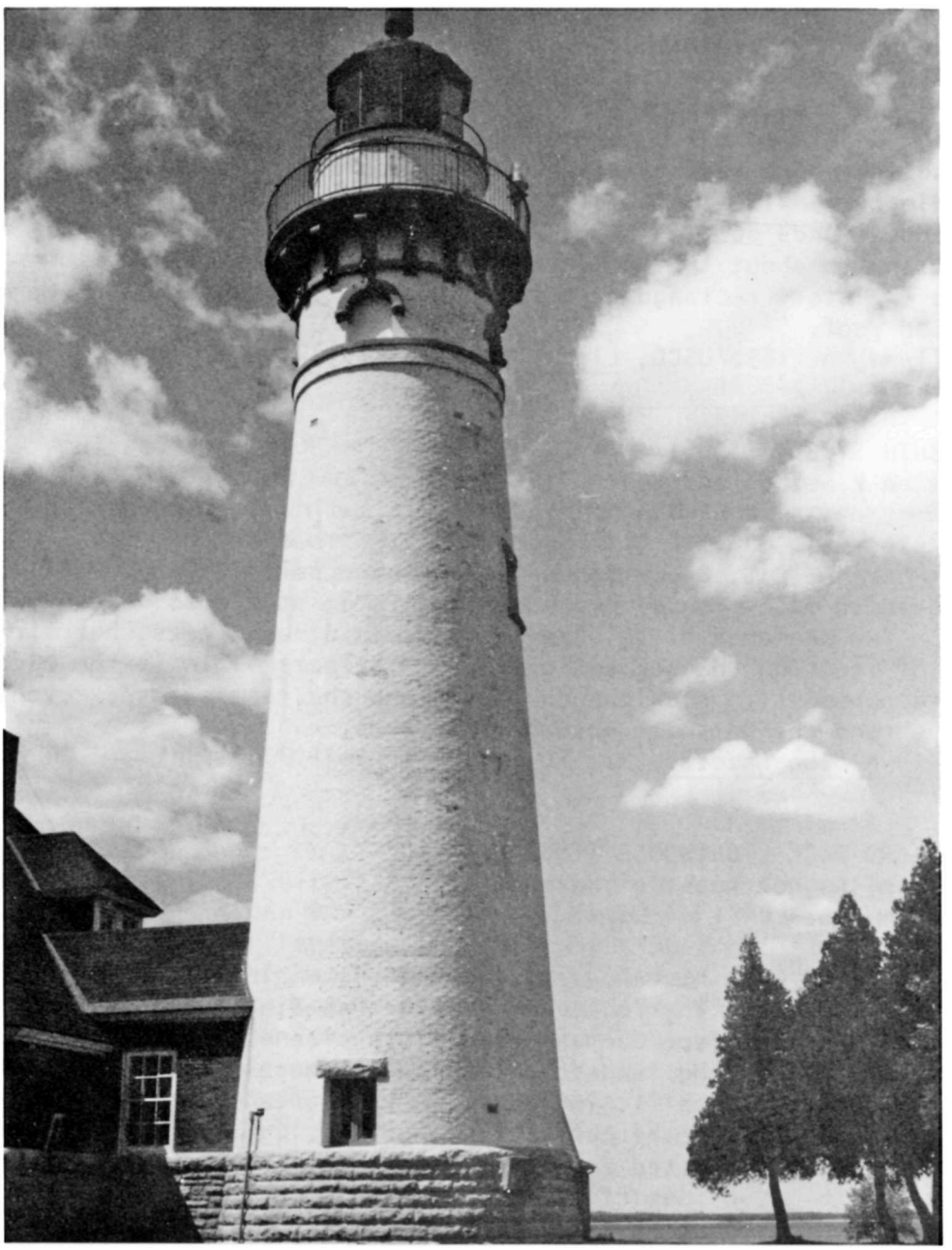
Keweenaw Bay
16.388010.5181097
Baraga

The lighthouse at Sand Point was built in 1878 after the Lighthouse Board had appropriated $10,000 for its construction. It consists of a square brick light tower approximately 30 feet high, located at the west end of the keeper's house, a 20 foot square brick building, with a gabled roof.
[Sawyer, p. 443; USCG, Light List, p. 119]

SAULT STE. MARIE UNION
STATION (c.1890)
566 W. Portage Ave.
Sault Ste. Marie

Sault Ste. Marie South
16.702800.5152955
Chippewa

The Duluth, South Shore, and Atlantic Railroad and the Minneapolis, St. Paul, and Sault Ste. Marie Railroad both reached Sault Ste. Marie in 1887 and jointly built this passenger station shortly thereafter. It is a rectangular building constructed of finished, coursed cut red sandstone. The center section is two stories high with a gabled roof, and measures 40 feet by 50 feet, while there are two single-story wings with hipped roofs, each 40 feet wide and 66 feet long.
[Dunbar, p. 159]



Seul Choix Point Lighthouse (1892), Gulliver Township

SEUL CHOIX POINT LIGHTHOUSE (1892) — Not Available
Seul Choix Point
Gulliver Township — Schoolcraft

This lighthouse was built in 1892 and equipped with a light of 450,000 candlepower. The conical light tower rests on a finished ashlar foundation, stands 80 feet high, and is 20 feet in diameter at the base, tapering to about 15 feet in diameter at the top. The keeper's house is a two-story rectangular brick building, 30 feet by 32 feet, with a hipped roof.
[Holland, p. 185; USCG, Light List, p. 175]

SEVENTH STREET (1906) — Laurium
Between Pine St. and Scott St. — 16.389800.5234100
Calumet — Houghton

In 1906, the R.S. Blome Company of Chicago paved twenty blocks of streets in Calumet with grooved granitoid concrete, at a cost of $200,000. There are a few segments of this paving on adjoining streets, but virtually all of it is on one segment of Seventh Street. This is the oldest concrete pavement in Michigan and has stood the test of over seventy years of use and the harsh climate of this area.
[Daily Mining Gazette, May 16, 1966, p. 14]

STANNARD ROCK LIGHTHOUSE (1882) — Not Available
Forty miles northeast of Marquette
Stannard Rock — Marquette

The Stannard Rock Lighthouse is one of the engineering marvels in the Upper Peninsula. The rock, named after Captain Stannard who discovered it in 1835, is 5 feet above the water level and about 50 feet long. It rests on a mile-long sandstone shoal which became a serious threat to ships and men as traffic increased in this area. In 1877, Congress appropriated $50,000 for the construction of the light, and that year the steamship Warrington floated a cofferdam to the rock where it was scuttled and filled with 3,000 tons of rock. Numbered, dressed stones were assembled on the foundation after a trial assembly without mortar on shore, and the light was ready on July 4, 1882, after a total expenditure of $300,000. The structure rests on a foundation of broken rock and cement, covered with wrought iron, built up to 23 feet above the lake.

The tower extends 110 feet above the water with walls 10 feet thick at the base, tapering to 3 feet thick at the top, protecting ten rooms on seven successive levels. The light, originally a small acetylene gas lamp, reflected through hundreds of light polished lenses with a focal point 102 feet above the water, is now electric. The light was made fully automatic in 1962 following a disastrous explosion and fire the summer before.
[USCG, Light List, p. 119; Holland, p. 187; NR]

VERMILION LIFE STATION (1876)
Vermilion Point
Vermilion

Vermilion
16.641100.5180270
Chippewa

The Vermilion Life Station was built by the United States Coast Guard in 1876 slightly west of Whitefish Point, in an area known for numerous shipwrecks. The buildings from the original life station are mostly in ruins, having fallen victim to vandalism and weathering. One building standing is a two-story, frame structure 20 feet wide and 40 feet long, probably built in 1876.
[History of the Great Lakes (Chicago: J.H. Beers, 1899), I, p. 379]

WHITEFISH POINT LIGHTHOUSE (1861,1902)
On Whitefish Point
Whitefish Township

Whitefish Point
16.656200.5181500
Chippewa

The first lighthouse at Whitefish Point was approved by Congress on March 3, 1847, and a stone building was completed in 1849. It was rebuilt in 1861, but later replaced by the present 80 foot steel tower in 1902. The earliest light had a whale sperm oil lamp, used until 1913 when it was replaced with the present incandescent oil vapor lamp, a 1,000 watt Aladdin mantle lamp, of 600,000 luminous range intensity, with a maximum range of twenty-five miles. Next to the skeletal steel light tower stands a two-story frame lightkeeper's house, 20 feet wide and 60 feet long, with a gabled roof. This facility was manned until 1970, when it was automated.
[USCG, Light List, p. 117; History of the Great Lakes (Chicago: J.H. Beers, 1899), pp. 365, 375; Holland, p. 186; James M. Ripley, "Whitefish Point Light," Inland Seas, XXIV (Winter 1968), pp. 279-284; NR]

ADDITIONAL LIGHTHOUSES

CRISP POINT LIGHTHOUSE (1904)
Fourteen miles west of Whitefish Point
Whitefish Township

Betsy Lake North
16.633115.5179000
Chippewa

DETOUR POINT LIGHTHOUSE (1861)
Detour Point
Detour

Detour Point
17.270000.5092270
Chippewa

FOURTEEN MILE POINT LIGHTHOUSE (1894)
At Fourteen Mile Point
Ontonagon Township

Greenland
16.338037.5206040
Ontonagon

GULL ROCK LIGHTHOUSE (1867)
West of Manitou Island
Grant Township

Manitou Island
16.449910.5251540
Keweenaw

MANITOU ISLAND LIGHTHOUSE (1850)
East Point of Manitou Island
Grant Township

Manitou Island
16.455700.5251780
Keweenaw

POVERTY ISLAND LIGHTHOUSE (1874)
Southeast end of Poverty Island
Fairbanks Township

Fairport
16.526010.5040085
Delta

ST. MARTIN'S ISLAND LIGHTHOUSE (1905)
Northeast end of St. Martin's Island
Fairbanks Township

Peninsula Point
16.518094.5038072
Delta

ADDITIONAL RAILROAD BUILDINGS

C, M, SP & P RR: AMASA STATION (1893)
Pine St.
Amasa

Amasa
16.388200.5120840
Iron

C, M, SP & P RR: CHANNING ROUNDHOUSE (1888)
West of M-95
Channing

Channing
16.415400.5110270
Dickinson

C, M, SP & P RR: CHANNING STATION (1888)
West of M-95
Channing

Channing
16.415520.5110070
Dickinson

C, M, SP & P RR: IRON MOUNTAIN FREIGHTHOUSE (c.1890)
East C St.
Iron Mountain

Iron Mountain
16.417185.5073960
Dickinson

C, M, SP & P RR: ONTONAGON ROUNDHOUSE (c.1900)
Steel St.
Ontonagon

Ontonagon
16.323080.5193045
Ontonagon

C, M, SP & P RR: ONTONAGON STATION (c.1900)
South of US-45
Ontonagon

Ontonagon
16.323080.5193045
Ontonagon

C & NW RR: BESSEMER STATION (c.1890)
US-2 and Sophie St.
Bessemer

Bessemer
15.726460.5151560
Gogebic

C & NW RR: IRON RIVER STATION (c.1910)
Selden St.
Iron River

Iron River
16.373080.5105060
Iron

ADDITIONAL RAILROAD BUILDINGS

C & NW RR: IRONWOOD ROUNDHOUSE (c.1900)
Curry St.
Ironwood

Ironwood
15.717945.5148840
Gogebic

C & NW RR: STEPHENSON STATION (c.1900)
Menominee St. and Mill St.
Stephenson

Stephenson
16.425025.5029015
Menominee

D, SS & A RR: BRUCE CROSSING STATION (c.1890)
East of US-45
Bruce Crossing

Rockland
16.333000.5155065
Ontonagon

D, SS & A RR: CHATHAM STATION (c.1900)
Rocky River Rd.
Chatham

Au Train
16.505055.5132050
Alger

D, SS & A RR: EWEN STATION (c.1890)
Main St.
Ewen

Matchwood
16.325010.5155057
Ontonagon

D, SS & A RR: HANCOCK FREIGHTHOUSE (c.1920)
Depot St.
Hancock

Chassell
16.379520.5220000
Houghton

D, SS & A RR: HANCOCK STATION (c.1920)
Depot St.
Hancock

Chassell
16.379520.5220000
Houghton

D, SS & A RR: MARQUETTE WAREHOUSE (1881)
121 E. Baraga St.
Marquette

Marquette
16.469890.5154000
Marquette

ADDITIONAL RAILROAD BUILDINGS

D, SS & A RR: NESTORIA STATION (c.1890)
Main St.
Nestoria

Herman
16.403033.5157075
Baraga

D, SS & A RR: ST. IGNACE
ROUNDHOUSE (c.1890)
Ellsworth St. and Marquette St.
St. Ignace

St. Ignace
16.676000.5081970
Mackinac

D, SS & A RR: SAULT STE. MARIE
FREIGHT STATION (c.1890)
Eureka St.
Sault Ste. Marie

Sault Ste. Marie South
16.702030.5152320
Chippewa

D, SS & A RR: SENEY STATION (c.1890)
Railroad St.
Seney

Not Available

Luce

D, SS & A RR: TROUT CREEK STATION (c.1890)
Garner St.
Trout Creek

Watersmeet
16.345060.5149045
Ontonagon

LS & I RR: GWINN FREIGHTHOUSE (c.1900)
Railroad St.
Gwinn

Gwinn
16.466400.5124760
Marquette

M, SP & SSM RR: MANISTIQUE
STATION (c.1920)
Wolf St. and Mackinac St.
Manistique

Cooks
16.557050.5090020
Schoolcraft

M, SP & SSM RR: RUDYARD
STATION (c.1890)
West St.
Rudyard

Rudyard
16.685140.5122500
Chippewa

INTRODUCTION TO BRIDGES AND TRESTLES

The Upper Peninsula does not have the great number or variety of bridges found in the Lower Peninsula, but it nevertheless has many significant examples in terms of age, size, and engineering design. Historically, the region's relatively small population was concentrated in the copper districts, the iron ranges, and in a few coastal cities like Sault Ste. Marie, Escanaba, and Menominee. Not surprisingly, the bulk of the historic bridges are also located in these areas. Because the region has few wide rivers, multi-span bridges of great length are uncommon. Rivers such as the Menominee, Escanaba, and Manistique were vital to the logging industry, but have never served as major avenues for other inland trade, so the region has very few moveable bridges.

Twelve of the surviving structures were built in the nineteenth century, twenty-eight were constructed between 1900 and 1920, and the remaining eleven are of more recent vintage. Half of these are iron or steel trusses, while the rest are a mixture of various styles, including stone or concrete arches, steel or concrete girders, steel cantilevered spans, trestles of timber or steel, and steel vertical lift bridges. They range in size from the parallel railroad and highway bridges across the St. Mary's River at Sault Ste. Marie, with river sections totaling nearly three thousand feet, to several examples of fifty foot stone arch or iron truss bridges.

There are several clusters of historic bridges that deserve particular attention. The most interesting concentration is at Sault Ste. Marie, where the visitor can view the evolution of American bridge design from a single vantage point. This cluster includes the International Railroad Bridge, with fixed truss spans built in 1887 and moveable spans dating from 1913 and 1945; a series of bridges across the power canal of the Michigan Lake Superior Power Company (see other entries), including a steel girder span and three trusses, all built in 1900, a steel arch span (1935), and other bridges of more recent vintage; and the International Highway Bridge (1962), an immense structure with two steel cantilevered spans, nearly three miles long including approaches. There is also a series of four multi-span railroad bridges built in 1898-1911 on the upper Menominee River, as well as individual railroad bridges on the Escanaba and Manistique Rivers. This section includes several significant structures built in recent decades, including the Cut River Bridge (1946) and the Houghton-Hancock Bridge (1959). The Mackinac Straits Bridge, completed in 1958, is not listed in this section because it was included in the Lower Peninsula Inventory.

C, M, SP & P RR: MINE STREET BRIDGE (1899)
Over Mine St.
Bessemer

Bessemer
15.726140.5151130
Gogebic

The Wisconsin Bridge and Iron Company constructed this three-span railroad bridge in 1899. It is 10 feet wide and 100 feet long overall, resting on two steel piers and concrete abutments. There are two steel deck girder approach spans, each 25 feet long, and a single steel through-plate girder span 50 feet long.

C & NW RR: FORD RIVER BRIDGE (1910)
Over the Ford River
Hyde

Escanaba
16.484100.5064075
Delta

The American Bridge Company of New York erected this two-span through-plate girder bridge across the Ford River for the Chicago and Northwestern Railroad in 1910. It rests on finished ashlar piers and abutments and measures 38 feet wide and 215 feet long.

COUNTY ROUTE 517 BRIDGE (1911)
Over the Escanaba River
Wells

Gladstone
16.494064.5069080
Delta

This massive concrete girder bridge across the Escanaba River, built in 1911, is now in ruins, with the southernmost spans removed. The portion of the bridge still standing is 20 feet wide and 630 feet long, consisting of sixteen spans resting on concrete piers.

D, SS & A RR: POWER CANAL BRIDGE (1900)
Over the Power Canal
Sault Ste. Marie

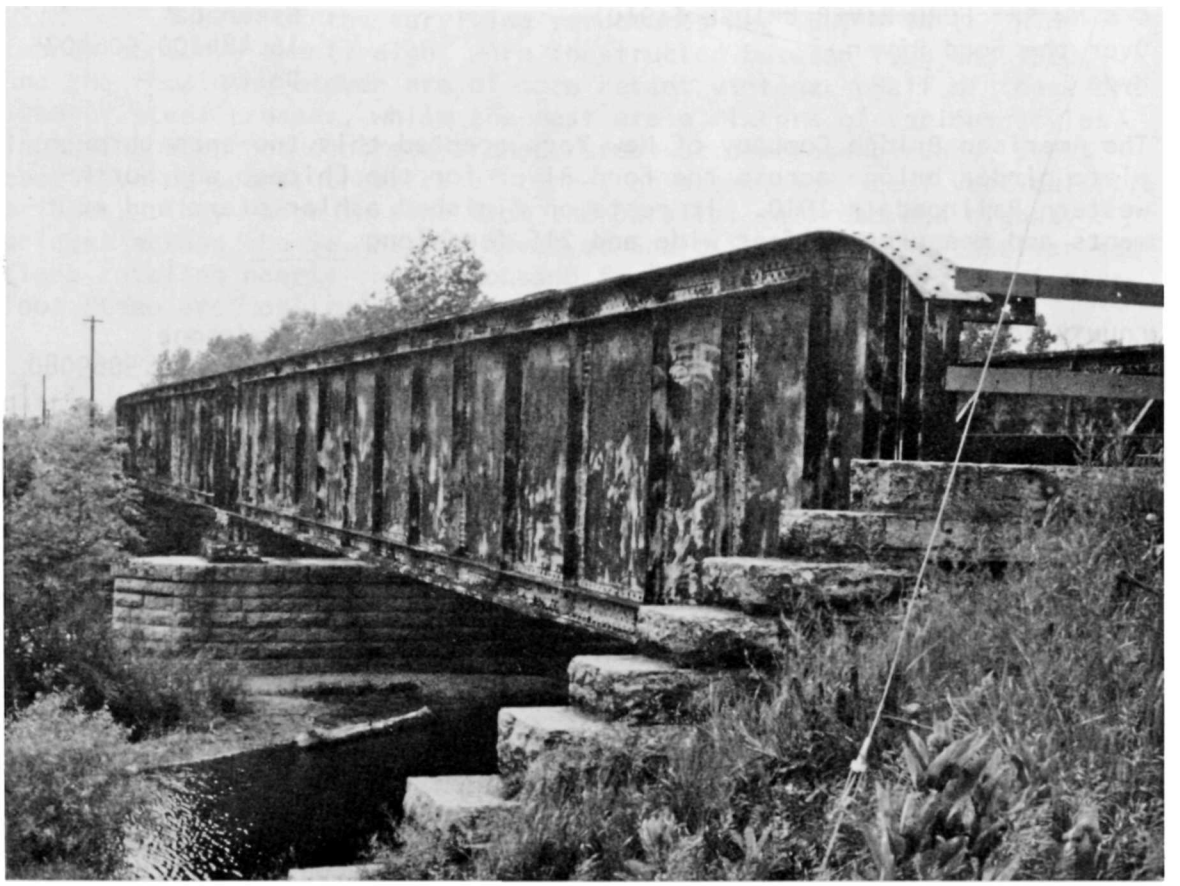
Sault Ste. Marie South
16.702215.5152560
Chippewa

This bridge was built at the time that the Michigan Lake Superior Power Company was constructing its massive power canal (see other entry) through Sault Ste. Marie. It is a four-span steel girder bridge, 15 feet wide and 225 feet long, resting on piers and abutments constructed of brick, with stone facings. It was built by the Lassac Branch of the American Bridge Company of Chicago.

D, SS & A RR: STURGEON RIVER
BRIDGE (1913)
Over the Sturgeon River
Chassell

Chassell
16.385400.5207520
Houghton

This railroad bridge was constructed in 1913 by the Wisconsin Bridge and Iron Works for the Duluth, South Shore, and Atlantic Railroad. It consists of three steel through-plate girder spans resting on steel piers and concrete abutments. The two approach spans are 40 feet long, while the center span is 65 feet in length.



C & NW RR: Ford River Bridge (1910), Hyde

M, SP & SSM RR: MANISTIQUE RIVER
BRIDGE (1899) — Not Available
Over the Manistique River
Manistique — Schoolcraft

This is a seven-span steel girder bridge, 10 feet wide and 280 feet long, resting on finished ashlar piers and abutments. It was designed by C.F. Lowete and constructed in 1899 at a cost of $50,000 by the Gillette-Herzog Manufacturing Company. The chief engineer of the railroad at the time was Thomas Greene. The nameplate proudly proclaims, "2-160 Ton Loco's," which is presumably the weight capacity of the bridge.
[Escanaba Daily Press, March 2, 1957, p. 6]

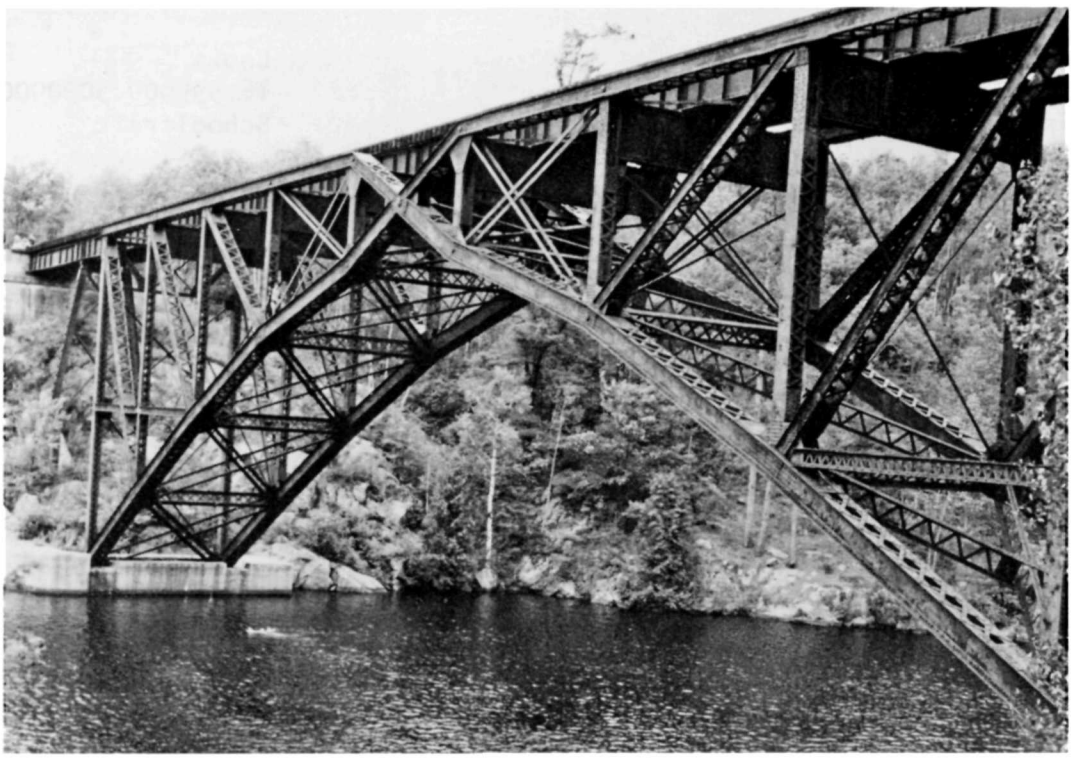
SIPHON BRIDGE (1919) — Cooks
Deer St., over the Manistique River — 16.599000.5090000
Manistique — Schoolcraft

United States Route Two was built through Manistique after the Manistique Paper Company had constructed a concrete flume (see other entry) which parallels the river and is 28 feet high and 160 feet wide. The highway bridge was built through the upper part of the flume so that the roadway is actually 4 feet below the water level, prompting local residents to call this structure the "Siphon Bridge." It is a reinforced concrete girder bridge, 66 feet wide and 300 feet long.
[Escanaba Daily Press, 1936 Progress Edition, Industry Section]

C, M, SP & P RR: MENOMINEE RIVER
BRIDGE (1902)
Over the Menominee River
East Kingsford

Iron Mountain
16.417830.5070000
Dickinson

The Chicago, Milwaukee, St. Paul, and Pacific Railroad reached Iron Mountain in 1886, so this is probably the second bridge built at this site. Overall, it is 330 feet in length, consisting of two sets of two steel deck girder approach spans, each set 75 feet in length, plus a single steel arch span 180 feet long, all resting on concrete piers and abutments.



C, M, SP & P RR: Menominee River Bridge (1902), East Kingsford

C & NW RR: Black River Bridge (1891), Ramsay

C & NW RR: BLACK RIVER [KEYSTONE]
BRIDGE (1891)
Over the Black River
Ramsay

Bessemer
15.730200.5150885
Gogebic

The Chicago and Northwestern Railroad built this stone arch bridge, known locally as the "Keystone Bridge," in 1891 at a cost of $48,322, utilizing limestone quarried at Kaukauna, Wisconsin. It is 45 feet long, 44 feet wide, stands 57 feet high, and has wing walls 50 feet

long. At the top of the arch, the cut coursed limestone blocks are about 5 feet thick, giving this bridge a graceful appearance not normally seen in stone arch construction.
[Pickands Mather Iron News, April 3, 1968; Ironwood Daily Globe, November 20, 1969, p. 11]

C & NW RR: FUME CREEK BRIDGE (1888) — Norway
Over the Fume Creek — 16.423920.5072600
Quinnesec — Dickinson

This stone arch bridge was built a decade after the Chicago and Northwestern Railroad was built into Quinnesec, so this bridge probably replaced an earlier wooden structure. It is a stone arch bridge 25 feet high, 30 feet wide with wing walls extending another 20 feet, and approximately 60 feet long. The arch opening is 20 feet wide and 25 feet high at the center.
[PLSMI, XI (1906), p. 48; Dunbar, p. 117]

C, M, SP & P RR: FIRST STREET
BRIDGE (1896)
Over First St.
Bessemer

Bessemer
15.726000.5151060
Gogebic

This bridge was constructed in 1896 by the Wisconsin Bridge and Iron Company and is 8 feet wide and 195 feet long overall. It consists of three spans resting on two steel piers and concrete abutments. The two approach spans, 45 feet and 60 feet in length, are steel deck girders, while the main span, 90 feet in length, is a steel Pratt pony truss.

C, M, SP & P RR: ONTONAGON RIVER
BRIDGE (1899)
Over the Ontonagon River
Ontonagon

Ontonagon
16.323100.5192090
Ontonagon

This railroad bridge over the Ontonagon River was fabricated in 1899 by the Lassig Bridge and Iron Works of Chicago. It is 15 feet wide and 470 feet long overall. There are four distinct segments: a southern approach, 130 feet long, consisting of five steel deck girder spans; a northern approach timber trestle 150 feet long; and two steel Pratt through trusses, each 100 feet long, resting on concrete piers.

C & NW RR: BIG CEDAR RIVER
BRIDGE (c.1917)
Over the Big Cedar River
Spaulding

Powers
16.459090.5060010
Menominee

This is a single-span riveted steel triple-intersection Warren truss, 12 feet wide and 120 feet long, resting on concrete abutments. Since the Chicago and Northwestern Railroad line went through this part of Menominee County in 1877, this is probably the second bridge at this location. It is virtually identical to a 1917 bridge built for the same railroad in nearby Stephenson (see other entry).
[Dunbar, p. 117]

C & NW RR: Escanaba River Bridge (1892), Wells

C & NW RR: ESCANABA RIVER BRIDGE (1892)
Over the Escanaba River
Wells

Gladstone
16.494064.5069080
Delta

The Chicago and Northwestern Railroad took over the Peninsula Railroad line between Marquette and Escanaba in 1865, only a year after it was completed. This bridge, constructed by the Lassig Bridge and Iron Works of Chicago in 1892, is the second bridge across the Escanaba River at this approximate location. The remains of stone piers from an earlier structure can be seen nearby. It consists of ten riveted steel triple-intersection Pratt through trusses, each 60 feet long. They rest on finished ashlar abutments, four ashlar piers, and five steel piers. [Dunbar, p. 117]

C & NW RR: LITTLE CEDAR RIVER BRIDGE (1917)
Over the Little Cedar River
Stephenson

Stephenson
16.452025.5028077
Menominee

The Chicago and Northwestern Railroad extended its line from Menominee to Powers in 1877, passing through Stephenson, making this at least the second bridge at this location. It was built in 1917 by the Wisconsin Bridge and Iron Company of Milwaukee. It is a single-span steel riveted triple-intersection Warren through truss, 12 feet wide, 120 feet long, resting on concrete abutments.
[Dunbar, p. 117]

C & NW RR: Little Cedar River Bridge (1917), Stephenson

C & NW RR: MENOMINEE RIVER
BRIDGE (1898) — Norway
Over the Menominee River — 16.423340.5069290
Quinnesec — Dickinson

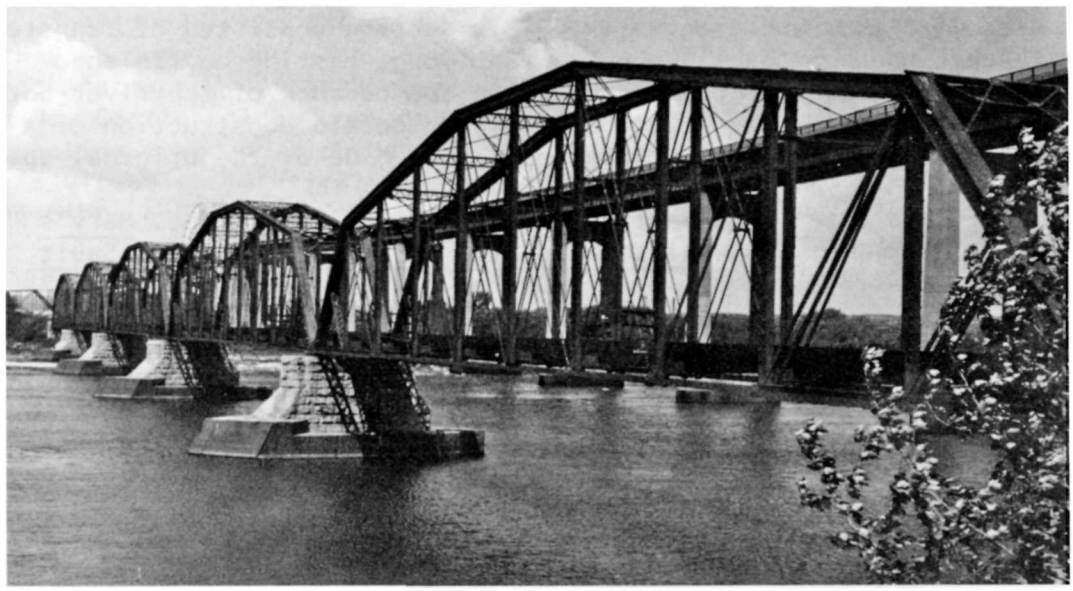
This bridge is located on a Chicago and Northwestern Railroad spur built to serve the large Kimberly-Clark paper mill in Niagara, Wisconsin. Overall, it is 18 feet wide and 320 feet long, and consists of two steel through trusses resting on concrete piers and abutments. One span is a pin-connected Pratt truss 200 feet long, while the other is a pin-connected triple-intersection Warren truss 120 feet in length.

C & NW RR: MENOMINEE RIVER
BRIDGE (1911) — Iron Mountain
Over the Menominee River — 16.415860.5079210
Breitung Township — Dickinson

This steel bridge over the Menominee River was erected by the American Bridge Company in 1911. It consists of four spans resting on finished ashlar piers and abutments and is 375 feet long. The two approach spans, 60 feet and 75 feet in length, are steel deck girders, while the two main spans, each 120 feet long, are riveted double-intersection Warren deck trusses.

FORT STREET BRIDGE (1902) — Sault Ste. Marie South
Over the Power Canal — 16.702770.5124700
Sault Ste. Marie — Chippewa

The Fort Street Bridge is a single-span, pin-connected, steel Parker through truss with sub-ties (Pennsylvania truss), resting on concrete abutments. It is 33 feet wide, 215 feet long, and crosses the power canal of the Michigan Lake Superior Power Company. It was built by the New Castle Bridge Company of Indianapolis, Indiana. It is virtually identical to the Spruce Street and Johnstone Street bridges (see other entries) in the same city.



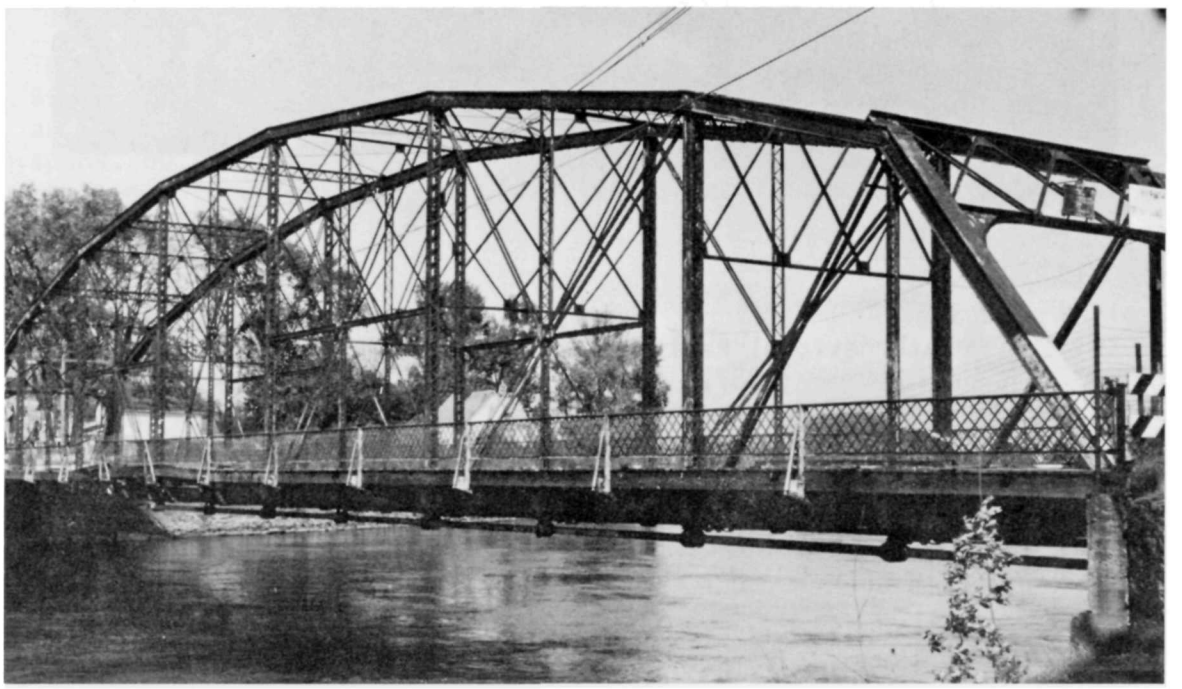
International Railroad Bridge: River Section
(1887), Sault Ste. Marie

INTERNATIONAL RAILROAD BRIDGE:
RIVER SECTION (1887)
Over the St. Mary's River
Sault Ste. Marie

Sault Ste. Marie South
16.702360.5153200
Chippewa

The International Railroad Bridge across the St. Mary's River was a cooperative venture involving four railroads: the Duluth, South Shore, and Atlantic; the Minneapolis, St. Paul, and Sault Ste. Marie; the Grand Trunk Western; and the Canadian Pacific. The substructure was built by a well-known bridge contractor, J. Reid, while the contract for the superstructure went to the Dominion Bridge Company of Lachine,

Quebec. This company was able to outbid all of the American companies because it was able to import cheap duty-free Scottish steel and then fabricate the structural members in Canada. The rest of the bridge, crossing the American Navigation Canal (see other entry), was built by the Detroit Bridge and Iron Works. This section consisted of ten steel camelback through trusses, each 239 feet long, resting on finished ashlar piers, with each pier anchored in the bedrock of the river bottom. One of these trusses was removed in 1913 to enable construction of a new moveable bridge over the American Locks, but nine of the original spans remain.
[Joseph E. and Estelle L. Bayliss, River of Destiny: The St. Mary's (Detroit, 1955), p. 190; Illustrated Atlas of the Twin Cities Sault Ste. Marie (Detroit, 1888), p. 81; Dunbar, p. 159; Boyer, Program 386]



Johnstone Street Bridge (1900), Sault Ste. Marie

JOHNSTONE STREET BRIDGE (1900)
Over the Power Canal
Sault Ste. Marie

Sault Ste. Marie South
16.704070.5152060
Chippewa

The Johnstone Street Bridge is a single-span, pin-connected, steel Parker through truss with sub-ties (Pennsylvania truss) resting on concrete abutments. It is 33 feet wide, 280 feet long, and was built by the New Castle Bridge Company of New Castle, Indiana in 1900 to provide a crossing over the Michigan Lake Superior Power Company's power canal. It is virtually identical to the Spruce Street and Fort Street bridges (see other entries) in the same city.

M, SP & SSM RR: ESCANABA RIVER
BRIDGE (1901)
Over the Escanaba River
Wells Township

Gladstone
16.493070.5071060
Delta

This railroad bridge was constructed by the American Bridge Company's Chicago plant in 1901 and has an overall length of 680 feet. There are a total of nine spans, all resting on concrete piers and abutments. Five of these are steel Pratt deck truss spans, with verticals, each 100 feet long, while the remaining four spans are steel deck girders, each 45 feet long.

M, SP & SSM RR: MENOMINEE RIVER
BRIDGE (1899)
Over the Menominee River
Holmes Township

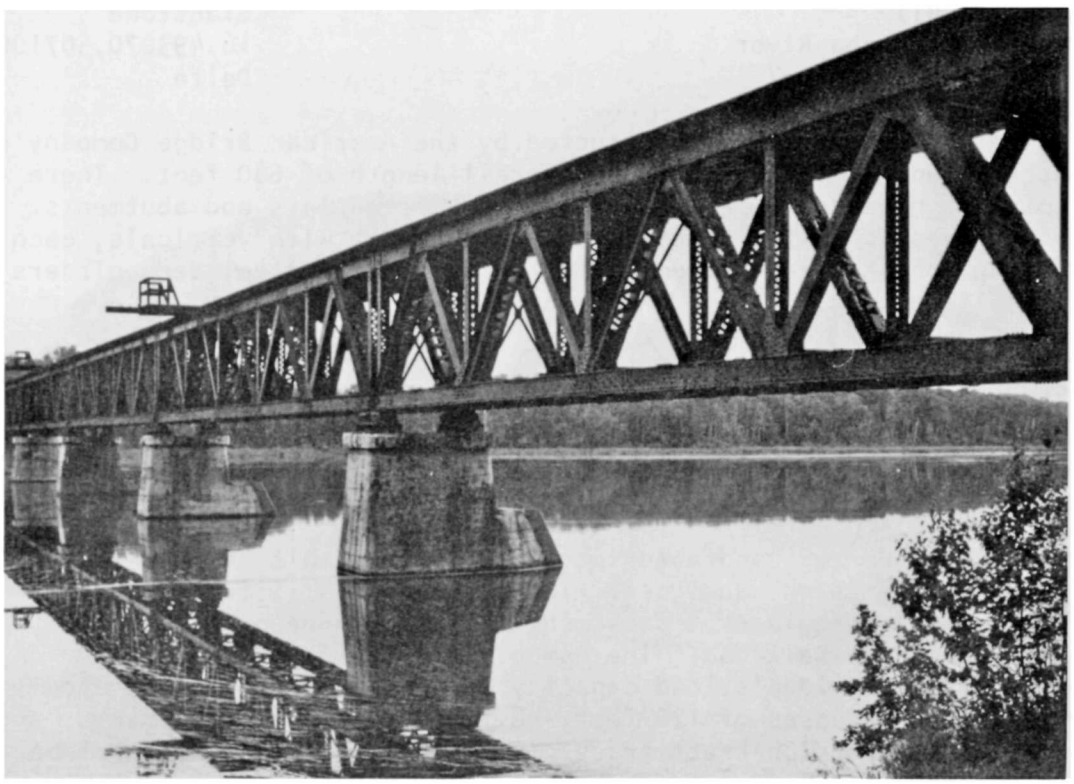
Pembine
16.439025.5058025
Menominee

The Gillette-Herzog Manufacturing Company built this bridge, with C.F. Loweth serving as the designer. Thomas Greene is listed on the nameplate as "Chief Engineer," presumably of the Minneapolis, St. Paul, and Sault Ste. Marie Railroad. The nameplate also proclaims, "2-160 Ton Loco's" as the bridge's load capacity. It consists of two riveted Pratt through trusses of 120 feet, resting on concrete abutments, and a double-intersection Pratt truss, 150 feet long, giving the bridge a total length of 390 feet.

SPRUCE STREET BRIDGE (1900)
Over the Power Canal
Sault Ste. Marie

Sault Ste. Marie South
16.704380.5152175
Chippewa

The Spruce Street Bridge is a single-span, pin-connected steel Parker through truss with sub-ties (Pennsylvania truss), resting on concrete abutments. It is 33 feet wide, 265 feet long, and was built in 1900 by the New Castle Bridge Company of New Castle, Indiana. It crosses the power canal of the Michigan Lake Superior Power Company and is nearly identical to the Fort Street and Johnstone Street bridges (see other entries) in the same city.

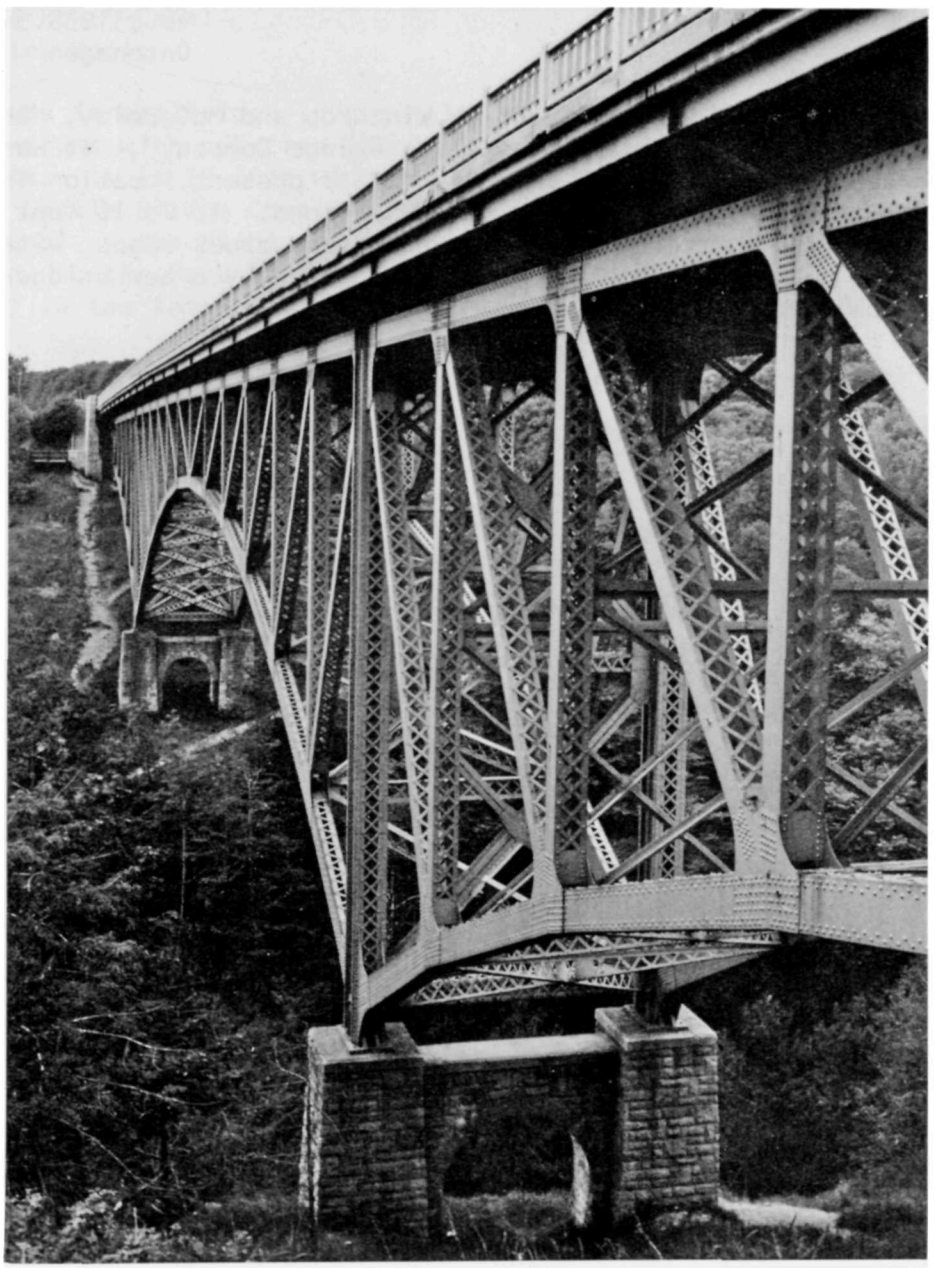


M, SP & SSM RR: Escanaba River Bridge (1901), Wells Township

VICTORIA ROAD BRIDGE (c.1910)
Over the Ontonagon River
Victoria

Rockland
16.331035.5176030
Ontonagon

The Victoria Road Bridge was built by Winthrop and McGormley, "Contracting Agents for the Toledo Massillon Bridge Company". It was originally located in Ewen, but was moved to its present location in 1945 to replace an older bridge washed out by a flood. It is 16 feet wide, 251 feet long, and consists of three steel pony truss spans, with a main span of 151 feet. It is now being replaced by a new bridge and will soon be scrapped.



Cut River Bridge (1946), Moran

CUT RIVER BRIDGE (1946)
US-2, over the Cut River
Moran

Epoufette
16.645085.5100450
Mackinac

This deck steel cantilevered bridge was constructed in 1941-1946 by W.J. Meager and Sons, Contractors, with the R.C. Mahon Company erecting the structural steel. It carries U.S. Route 2 over the deep gorge created by the Cut River. The bridge is 40 feet wide, 641 feet long, with its 888 tons of structural steel resting on finished ashlar abutments. The massive single cantilevered span carries the roadway 147 feet above the level of the river.
[MSIAS]

D, SS & A RR: BALTIMORE RIVER
TRESTLE (1899)
Over the Baltimore River
Stannard Township

Rockland
16.331007.5155055
Ontonagon

A thirteen-span steel trestle, this structure was built by the Lassig Bridge and Ironworks Company of Chicago in 1899. It is 8 feet wide, 435 feet long, rests on concrete abutments and steel piers ranging from 20 feet to approximately 125 feet in height, and consists of thirteen steel deck girder spans.

D, SS & A RR: JUMBO RIVER
TRESTLE (1899)
Over the Jumbo River
Kenton

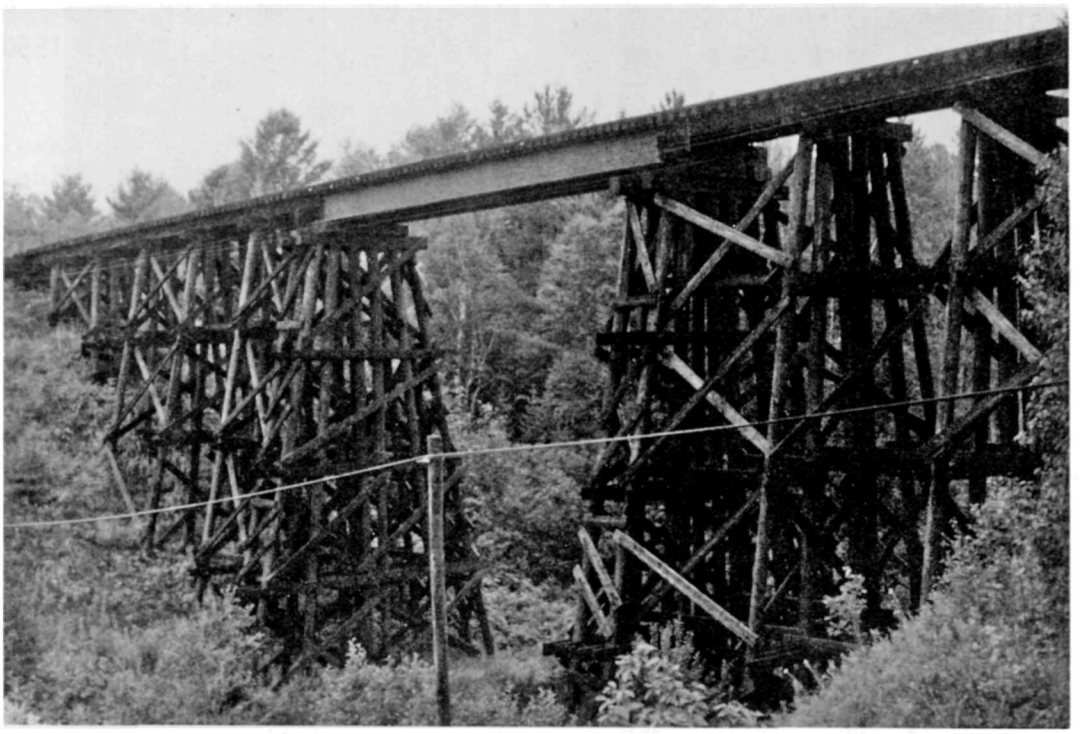
Kenton
16.352035.5149080
Houghton

The Jumbo River Trestle is 8 feet wide and 200 feet long and consists of three distinct sections. There are two timber trestle approach sections, each 75 feet long, and a single steel deck girder span resting on steel piers, 50 feet in length.

D, SS & A RR: ONTONAGON RIVER
TRESTLE (1900)
Over the Ontonagon River
Interior Township

Watersmeet
16.339055.5149035
Ontonagon

This steel trestle, over the middle branch of the Ontonagon River, was constructed in 1900 by the American Bridge Company's Lassig Branch, located in Chicago. It is 8 feet wide, 420 feet long, and consists of eight steel deck girder spans resting on concrete abutments and steel piers ranging in height from 20 feet to 110 feet.



D, SS & A RR: Jumbo River Trestle (1899), Kenton

D, SS & A RR: Ontonagon River Trestle (1900), Interior Township

Houghton-Hancock Bridge (1959), Houghton

HOUGHTON-HANCOCK BRIDGE (1959)
Over Portage Lake
Houghton

Chassell
16.380650.5219880
Houghton

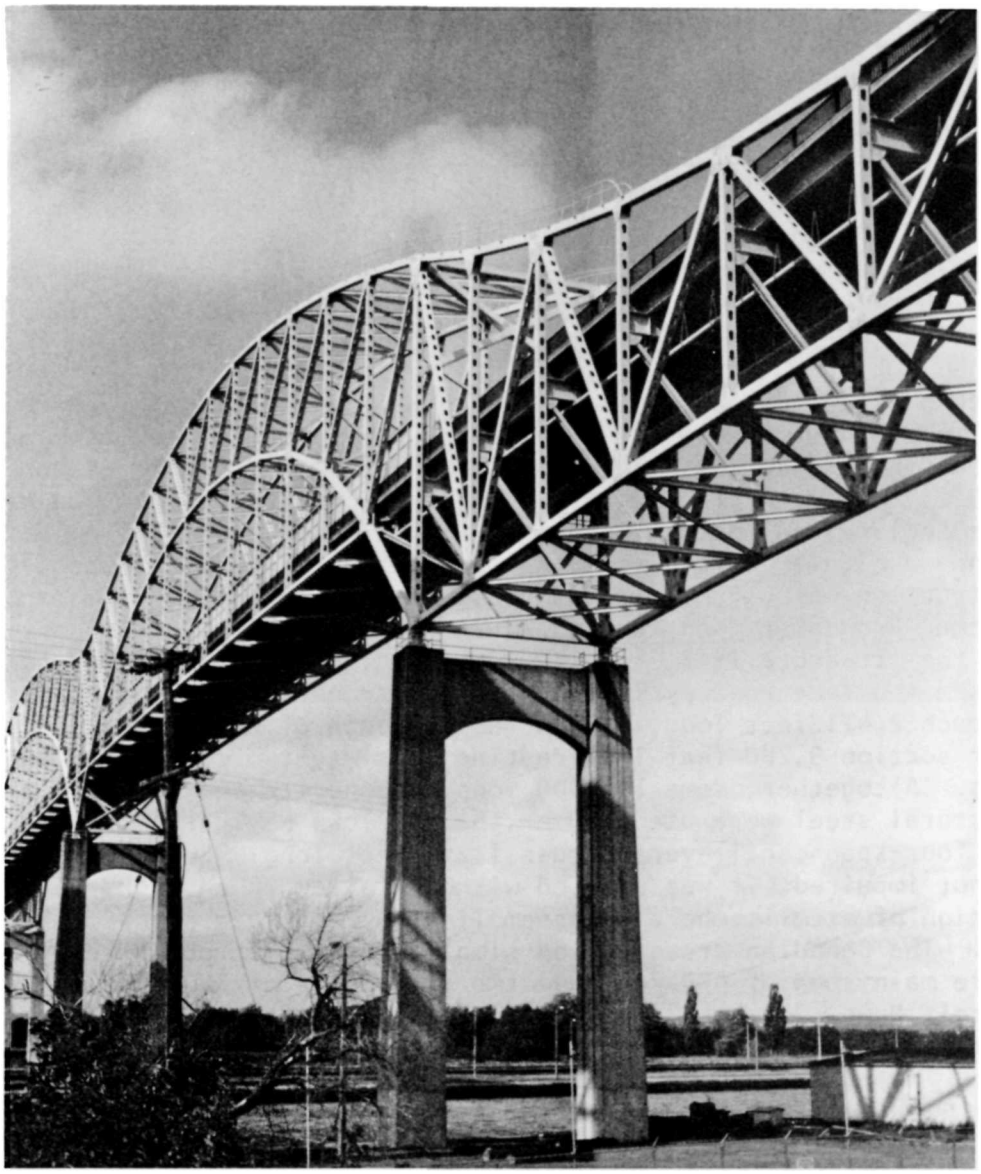
This vertical lift bridge replaced a 1905 steel swing bridge, which had in turn replaced an earlier wooden swing bridge. It was constructed by the State of Michigan, with the two railroads which use the bridge, the Duluth, South Shore, and Atlantic and the Copper Range, sharing in the costs, which amounted to over $13 million. The chief engineer was Martin McGrath, while George Jacobson was the bridge engineer. The Al Johnson Construction Company was the general contractor, the American Bridge Company erected the superstructure, and the Bethlehem Steel

Company supplied the structural steel. The bridge has an overall length of 1,310 feet, with a lift span 260 feet long, and twin steel towers 180 feet high. When fully raised, the lift span provides a clearance of 104 feet for shipping on Portage Lake, part of the Keweenaw Waterway. It is a two-level bridge, with four highway lanes on the upper segment and a railroad track on the lower level.
[Hancock, Michigan Centennial: 1863-1963 (Hancock, 1963), p. 19; Claire Moyer, Ke-Wee-Naw (Denver, 1966), pp. 69-70]

INTERNATIONAL HIGHWAY BRIDGE (1962)
Over the St. Mary's River
Sault Ste. Marie

Sault Ste. Marie South
16.702400.5153200
Chippewa

The twin cities of Sault Ste. Marie in Michigan and Ontario were linked by a railroad bridge in 1887 (see other entry), but automobile traffic between the cities was carried by ferry until this bridge was opened in 1962. An International Bridge Authority was created by the Michigan State Legislature and the Government of Ontario in 1935 to plan and finance a highway bridge here, but more than two decades passed before construction was begun. It was designed by the firm of Steinman, Boynton, Gronquist, and London of New York and cost $20 million. Overall, the structure is 2.76 miles long, including approaches, and provides a two lane roadway 28 feet wide. It consists of the American approach 2,471 feet long, a Canadian approach of 2,942 feet, and the river section 9,280 feet long resting on sixty-two reinforced concrete piers. Altogether, some 114,000 tons of concrete and 11,000 tons of structural steel were used. Over the American Navigation Canal, there is a four-span cantilevered truss 1,260 feet long. So that navigation was not impaired, it was erected without falsework through the balanced addition of steel members in assembling the two main spans of 540 feet each. The Canadian crossing was simpler because it consists of a single main span of 430 feet and two side spans of 200 feet each.
[Detroit News, October 28, 1962, p. 7; Engineering Report of Steinman, Boynton, Gronquist, and London, June 30, 1960]



International Highway Bridge (1962), Sault Ste. Marie

INTERNATIONAL RAILROAD BRIDGE:
AMERICAN LOCKS SECTION (1913,1945)
Over the American Locks
Sault Ste. Marie

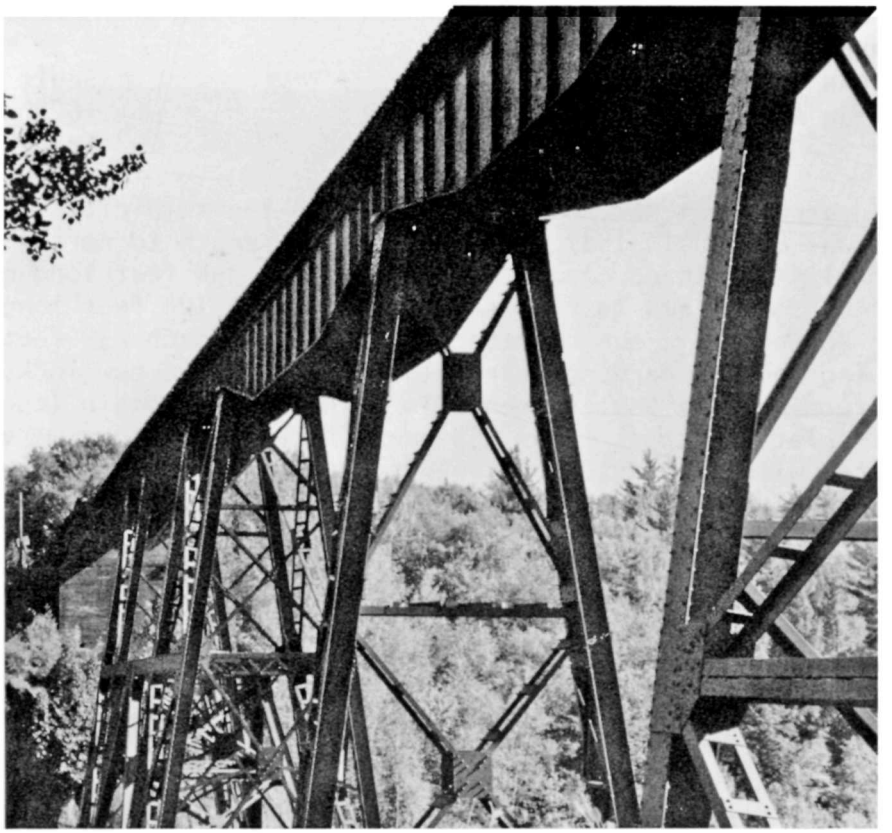
Sault Ste. Marie South
16.702360.5153200
Chippewa

The International Railroad Bridge linking the twin cities of Sault Ste. Marie was opened in 1887. Proceeding from south to north, the bridge originally consisted of a single swing span 398 feet long over the two American Locks; two lattice truss spans, each 104 feet long over the North Channel; and ten camelback truss spans, each 239 feet long, crossing the St. Mary's River. In 1913, when two new locks were under construction, the Davis (opened in 1914) and the Sabin (opened in 1919), the two lattice truss spans and one of the truss spans were removed and replaced with a Straus Trunnion Bascule Bridge, designed by the Straus Bascule Bridge Company of Chicago and built by the Pennsylvania Steel Company. This trunnion bridge, commonly called the "Jackknife Bridge," is 23 feet wide and 336 feet long. The swing span was replaced in 1945 by a vertical lift bridge, 21 feet wide, 369 feet long, with steel towers 175 feet in height, equipped with 70 ton counterweights. [Joseph E. and Estelle L. Bayliss, River of Destiny: The St. Mary's (Detroit, 1955), p. 190; Dunbar, p. 159; Illustrated Atlas of the Twin Cities Sault Ste. Marie (Detroit, 1888), p. 81]

LS & I RR: DEAD RIVER
TRESTLE (1916)
Over the Dead River
Negaunee Township

Negaunee
16.461120.5155570
Marquette

The increased weight of locomotives and cars made the timber trestle built in 1896 at this location increasingly unsafe and it was replaced in 1916 by this steel girder structure. It is 565 feet long, stands 104 feet above the base of the center pier, and consists of nine steel girder spans and one reinforced concrete girder span resting on eight steel piers, two concrete piers, and concrete abutments. The spans vary in length from 30 feet to 116 feet.



LS & I RR: Dead River Trestle (1916), Negaunee Township

MANSFIELD STREET VIADUCT (1922)
Over the Soo Line Railroad
Ironwood

Ironwood
15.717780.5148780
Gogebic

This viaduct carrying Mansfield Street over several rail lines, including the Soo Line and the Chicago and Northwestern, was jointly built in 1922 by the Chicago and Northwestern Railroad, the Minneapolis, St. Paul, and Sault Ste. Marie Railroad, and the city of Ironwood. It was designed by I.F. Stern, consulting engineer, who estimated construction costs of $200,000. However, the Albinson Construction Company of Minneapolis submitted a surprisingly low bid of $93,732, which the parties accepted. The Albinson Company suffered bankruptcy as a result of this contract.

The viaduct, which provides a clear roadway of 24 feet, a sidewalk 6 feet wide, and a minimum clearance of 22 feet over the tracks, is a reinforced concrete structure with a T-configuration. The main segment over the railroad lines is 615 feet long and consists of twelve spans of varying lengths. At the north end of the main section, there are two inclined approachs which are perpendicular to the main section. One is 435 feet long, while the other is 445 feet in length.
[City of Ironwood, Record of Proceedings, VIII (1920-1924), pp. 21, 41, 249]

Mansfield Street Viaduct (1922), Ironwood

ADDITIONAL BRIDGES

ASHMUN STREET BRIDGE (1935)
Over the Power Canal
Sault Ste. Marie

Sault Ste. Marie South
16.703400.5152255
Chippewa

BALDWIN TOWNSHIP BRIDGE (c.1910)
County Rd. G-3, over the Rapid River
Baldwin Township

Trenary
16.500020.5098060
Delta

BAY STREET BRIDGE (1903)
Over the Waiska River
Brimley

Brimley
16.686060.5142025
Chippewa

C, M, SP & P RR: AMASA BRIDGE (c.1920)
West of Maple St.
Amasa

Amasa
16.388200.5120690
Iron

CORNELL BRIDGE (1915)
County Rte. 519, over the Escanaba River
Cornell Township

Gladstone
16.493013.5076015
Delta

COUNTY ROAD 510 BRIDGE (1921)
Over the Dead River
Negaunee Township

Negaunee
16.458420.5156310
Marquette

COUNTY ROAD 601 BRIDGE (1911)
Over the Michigamme River
Republic

Republic
16.424075.5136090
Marquette

ELM STREET BRIDGE (1909)
Over the Eagle River
Eagle River

Phoenix
16.402090.5251760
Keweenaw

FROBERG ROAD BRIDGE (1922)
Over the Sturgeon River
Pelkie

Pelkie
16.378070.5188005
Baraga

ADDITIONAL BRIDGES

KYRO ROAD [COUNTY ROAD 227] BRIDGE (1911)
Over the Sturgeon River
Pelkie

Pelkie
16.376015.5184010
Baraga

LAKESHORE DRIVE BRIDGE (1915)
Over the Eagle River
Eagle River

Phoenix
16.402180.5251580
Keweenaw

MASONVILLE TOWNSHIP BRIDGE (1916)
County Rd. I-39, over the Rapid River
Masonville Township

Trenary
16.501065.5096030
Delta

MENOMINEE STREET BRIDGE (1921)
Over the Little Cedar River
Stephenson

Stephenson
16.452025.5028077
Menominee

SCENIC DRIVE BRIDGE (1920)
Over the Charlotte River
Bruce

Oak Ridge
16.712640.5133175
Chippewa

STURGEON RIVER BRIDGE (1917)
County Rte. 497, over the Sturgeon River
Nahma Township

Garden
16.525075.5077675
Delta

STURGEON RIVER ROAD BRIDGE (1907)
Over the Sturgeon River
Chassell

Pelkie
16.384025.5205045
Houghton

WELLS TOWNSHIP BRIDGE (1915)
County Rte. 537, over the Ford River
Wells Township

Gladstone
16.484025.5066088
Delta

Alpha Water Tower (1915,1931), Alpha

ALPHA WATER TOWER (1915,1931) — Fortune Lakes
Mine Rd. — 16.393740.5099900
Alpha — Iron

The Alpha Water Tower is an interesting example of "adaptive use" of an existing structure while a new replacement was built. The original water tower, built in 1915, rested atop a wooden tower 10 feet square and approximately 45 feet high. When a new, larger water tank was built on the same site in 1931, the original wooden tower was left standing, and the new steel tank, 20 feet in diameter and 15 feet high, was simply built over the old tower, with its steel supports well away from the old tower. During this new construction, the water supply for this small town was not interrupted.

ATLANTIC MINING COMPANY
REDRIDGE DAM (1894) — Beacon Hill
Across the Salmon Trout River — 16.366260.5223000
Redridge — Houghton

The Atlantic Mining Company constructed this log dam across the Salmon Trout River to supply water to their stamping plant at nearby Redridge, on the shores of Lake Superior. It was completed in 1894, constructed entirely from local materials by a workforce of three hundred men housed in temporary shacks in this remote area. It consists of a timber framework filled with rock and earth. Overall, the dam is 51 feet long at the base and 228 feet long at the crest. It stands 50 feet high, 53 feet thick at the base, and 28 feet thick at the top. The flow of water was controlled through three channels: the supply launder leading to the mill, constructed of wood planking and measuring 18 inches by 36 inches by 2,050 feet long, with a run of 5 inches per 100 feet of length; two 24 inch diameter cast iron waste pipes located at the base of the dam; and a spillway located at the crest of the center of the dam, 30 feet wide, double-planked, and equipped with wooden flashboards. The dam itself is extant, but the waste pipes and supply launder are not. When the Baltic Mining Company erected a stamp mill west of the Salmon Trout River, this dam was not large enough to supply the needs of both mills, so it was replaced in 1901 by a higher steel dam (see other entry) built slightly downstream. This log dam was then submerged to a depth of 20 feet until recently, when the

water level behind the steel dam was dropped, thus exposing the older structure.
[Houghton Daily Mining Gazette, October 7, 1967, pp. 1, 9; Stevens, II (1902), p. 127; Engineering and Mining Journal, LVII (May 1894), p. 494; Engineering and Mining Journal, LIX (March 1895), p. 246]

Atlantic Mining Company Redridge Dam (1894), Redridge

COMPENSATING WORKS (1914)
Across the St. Mary's River
Sault Ste. Marie

Sault Ste. Marie South
16.702400.5153640
Chippewa

There has been a dam at the head of the St. Mary's River since the late 1890's, when the hydroelectric potential of the river was harnessed on both the American and Canadian sides. The present dam was built in 1914 when the third and fourth locks on the American Canal (the Davis and the Sabin) were under construction. It serves to regulate the flow of the St. Mary's River and thus the level of Lake Superior. The dam is over 850 feet long, with cut stone piers and abutments, and has sixteen steel sluice gates, each 53 feet 7 inches wide and 13 feet high. The gates are raised by a rack and pinion mechanism which is hand-operated. Eight gates are in the United States, and eight are in Canada.

ESCANABA PAPER COMPANY
DAM NUMBER TWO (1911)
Across the Escanaba River
Escanaba Township

Gladstone
16.492010.5073047
Delta

The Escanaba Pulp and Paper Company, established in 1911, built this dam about one mile north of the location of the Escanaba Power Company Dam Number One (see other entry). The company changed its name to the Escanaba Paper Company in 1919. The plant and dams under the company's control were leased to the G.H. Mead Company in 1922, and Mead bought a controlling interest in 1942. This dam was built to supply the paper mill with water and has never been the site of a hydroelectric plant. Proceeding from south to north, the dam consists of a set of twelve vertical lift headgates, each 6 feet wide, raised by a manually-operated rack and pinion mechanism; two tainter gates, each 20 feet wide and built in the 1940's; and finally, the main dam section, a reinforced concrete spillway, approximately 10 feet high and 200 feet long.
[Clint Dunathan, The Century Book: Escanaba 1863-1963 (Escanaba, 1963), pp. 236-237]

Manistique Water Tower (1922), Manistique

LAKE INDEPENDENCE DAM (1912)
Lake Independence Drive
Big Bay

Big Bay
16.448010.5184035
Marquette

This concrete dam was built in 1912 to replace a pole dam which washed out in the spring of that year. The Lake Independence Lumber Company commissioned Gust Anderson, concrete contractor of Marquette, to do all the concrete work. The present dam, placed within 100 feet of the old one, is 35 feet long, 3 feet wide, and 10 feet high.

MANISTIQUE PAPER COMPANY
DAM AND FLUME (1919)
On the Manistique River
Manistique

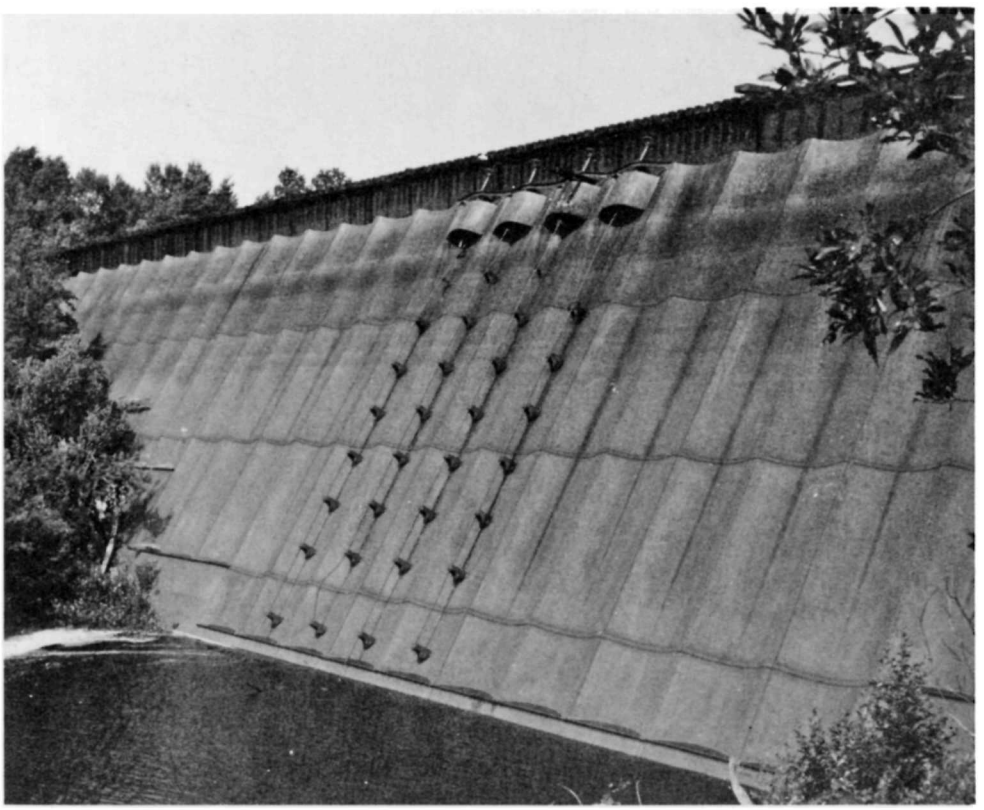
Cooks
16.559000.5090000
Schoolcraft

William J. Murphy of the Minneapolis Tribune purchased the riparian rights to the Manistique River in 1916 and built a pulp and paper mill, along with a dam and flume to bring water into the plant. Rather than raise the level of the entire river, he had a flume built which paralleled the river. It was erected in 1918-1920, with H.F. Storrer as the engineer of construction and C.A.P. Turner of Minneapolis serving as the consulting engineer. The reinforced concrete flume is 160 feet wide, 28 feet high, and 3,300 feet long, with a capacity of 8,000 cubic feet of water per second. At the head of the flume is a concrete dam, with five radial gates controlling the flow of water into the flume and six radial gates controlling the river flow.
[Escanaba Daily Press, 1936 Progress Edition, Industry Section; Manistique Centennial Magazine (Manistique, 1960)]

MANISTIQUE WATER TOWER (1922)
Deer St. (US-2)
Manistique

Cooks
16.559000.5090000
Schoolcraft

This water system was begun in 1920, after the city had floated $97,000 in bonds to finance it. A new pumping plant was erected nearby at the same time. It was constructed by Fridolf Danielson, a local contractor who finished it in 1922. It is an octagonal brick structure, 25 feet in diameter, stands 200 feet high, and has a steel tank with a capacity of 200,000 gallons.
[Manistique Pioneer Tribune, July 4, 1968; Manistique Centennial Souvenir Book (1960)]



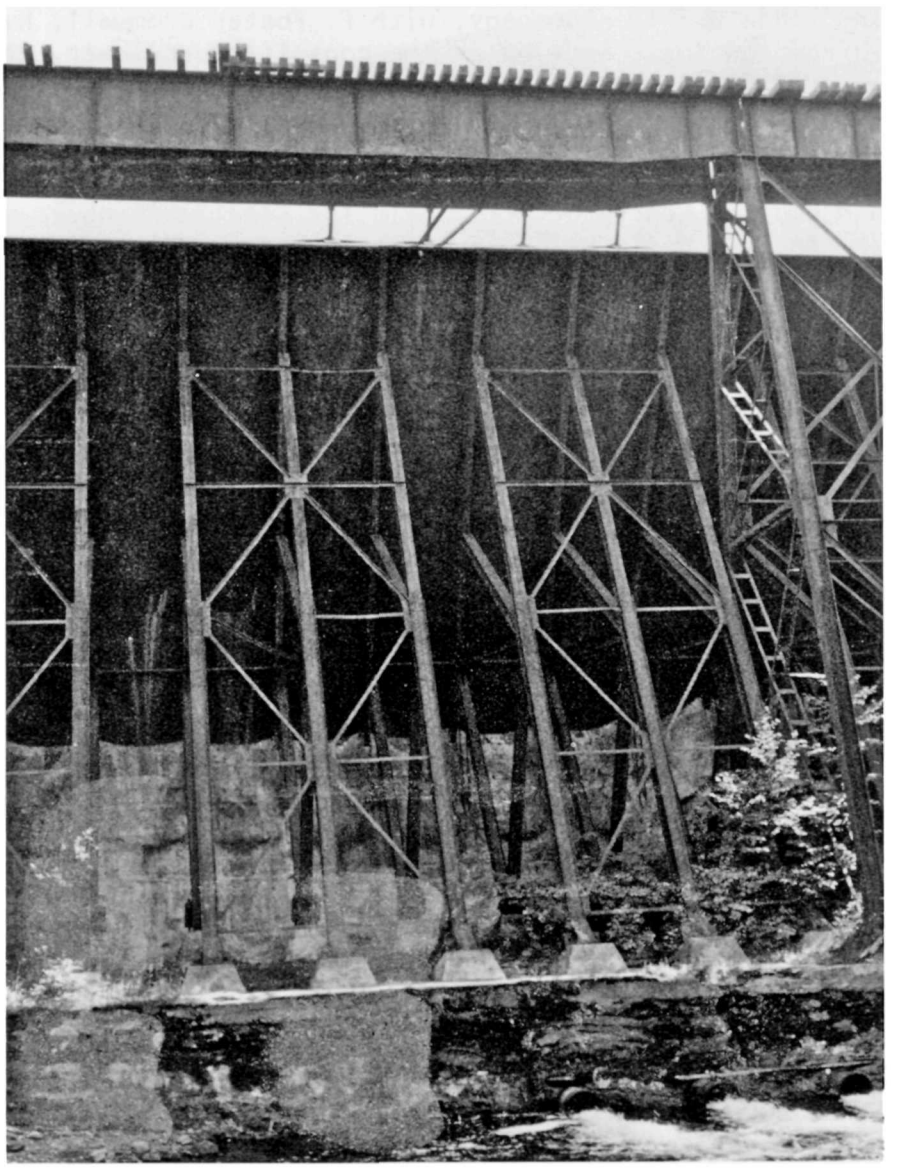
Redridge Steel Dam (1901), Redridge

REDRIDGE STEEL DAM (1901)
Across the Salmon Trout River
Redridge

Beacon Hill
16.366260.5223000
Houghton

The water supply impounded by the log dam, built by the Atlantic Mining Company across the Salmon Trout River in 1894 (see other entry), proved inadequate when the Baltic Mining Company built a stamp mill on Lake Superior just west of the river. Accordingly, the two mining companies decided to jointly build a new dam and share the larger water supply. Because of the lack of suitable stone in this region, they decided to build a steel gravity dam, making this structure only the second dam of that design in the United States and the first of any significant size.

It was preceded by a 46 foot high, 184 foot long dam near Ash Fork, Arizona constructed by the Wisconsin Bridge and Iron Company in 1897-1898. The Redridge Dam was designed by J.F. Jackson, engineer for the Wisconsin Bridge and Iron Company, with F. Foster Cromwell, hydraulic engineer from New York, serving as the consulting engineer. The entire project cost $150,000, with the foundations accounting for $90,000 of the total. The excavation work was performed by Atlantic Mining Company employees under the direction of F.G. Coggin, Jr., superintendent of the company's stamp mill. The contracting firm of Prendergast and Clarkson of Chicago did the concrete work, while the steel was fabricated and erected by the Wisconsin Bridge and Iron Company. Overall, the structure is 1,006 feet long, consisting of a center steel and concrete section 464 feet long and two earth embankment wings with concrete core walls. The center portion of the dam required 8,000 cubic yards of concrete, while another 2,000 cubic yards was used in the core walls, and 500 tons of steel plates and girders were used. The main dam rests on a solid concrete foundation 64 feet thick, varying in height from 14 feet to 38 feet, resting on bedrock. It is comprised of five main sections, with the tallest or center section standing 74 feet high. The dam consists of steel boilerplates, 8 feet by 16 feet, riveted and caulked, with a concave shape on the upstream side. In the lower section of the dam, these plates are three-sixteenths of an inch thick and rest directly against the concrete base, while in the upper portion they are three-eighths of an inch thick and are supported by parallel inclined steel I-beams 2 feet deep, which in turn are supported by heavy triangular frameworks of inclined steel columns and struts. The upper portion of the dam is inclined at an angle of 45 degrees from the water. The flow of water from the dam to the two mills was controlled by three 24 inch intakes, with the two on the west end of the dam connected to a 38 inch riveted steel pipeline leading to the Baltic mill some 2,200 feet away. In addition, there are four 24 inch discharge pipes in the center of the concrete base, each fitted with a sliding external gate and a gate valve. Finally, there was a waste weir built approximately 350 feet west of the end of the west wing wall. The mouth of the weir is 30 feet long, tapering in width from 50 feet to 30 feet, leading to a timber flume, 30 feet wide, 4 feet deep, and 400 feet long, discharging back into the river. This remarkable structure created a reservoir of 600 million gallons, ample storage for the two mills, which used an average of 25.5 million gallons daily.
[F.H. Bainbridge, "Structural Steel Dams," Engineering News, LIV (1905), pp. 323-324; F.H. Bainbridge, "Structural Steel Dams," Journal of the Western Society of Engineers, X (1905), pp. 615-631; Houghton Daily



Redridge Steel Dam (1901), Redridge

Mining Gazette, October 7, 1967, pp. 1, 9; J.F. Jackson, "Copper Mining in Upper Michigan," Journal of the Western Society of Engineers, VIII (February 1903), pp. 15-16; J.F. Jackson, "Four Steel Dams: Their Design and History," Engineering News-Record, CIV (1930), p. 281; James Dix Schuyler, Reservoirs for Irrigation, Water Power, and Domestic Water Supply (New York, 1912), pp. 456-459; Stevens, I (1900), pp. 254-256; C. Maxwell Stanley, "Why Not Steel Dams?", Engineering News-Record, CIX (1932), pp. 652, 658; "The Redridge Dam," Engineering News, XXXXVI (1901), pp. 101-102]

REISS COAL COMPANY LOADER (1925)
Reiss Coal Dock
Escanaba

Gladstone
16.495079.5066027
Delta

The C. Reiss Coal Company acquired its first dock for loading coal in Escanaba in 1899, but this Meade-Morrison loading bridge was built and installed in 1925. This loader, a structural steel framework, sits on a base 60 feet wide, with the base moving along tracks which run the length of the dock. The loader is approximately 300 feet wide between the two parallel tracks. It has an unloading capacity of 4,000 tons per day.
[Clint Dunathan, The Century Book: Escanaba 1863-1963 (Escanaba, 1963), p. 235; Souvenir of Delta County, Michigan (Iron Mountain, n.d.), p. 5; Escanaba Daily Press, 1936 Progress Edition, Transportation Section]

SAULT STE. MARIE WATER TOWER (c.1900)
Ryan St. and Easterly St.
Sault Ste. Marie

Sault Ste. Marie South
16.702750.5151800
Chippewa

This water tower was constructed around 1900 and was in use until recently when it was replaced by a new water tower. Overall, this masonry structure is 45 feet in diameter at the base and 78 feet high, and is topped with a conical roof. The lower half of the tower is built of cut coursed stone, while the upper half is brick. It houses a 370,000 gallon steel tank which is 40 feet in diameter.
[McNamee, Porter, and Seeley, Consulting Engineers, "Report on Water Storage, Sault Ste. Marie, Michigan, 1964," p. 5]

Sault Ste. Marie Water Tower (c.1900), Sault Ste. Marie

NOTES

NOTES

HAER INVENTORY

1. NAME OF STRUCTURE	2. DATE	3. NATURE OF STRUCTURE	4. INDUSTRIAL CLASSIFICATION
Grand Rapids Hydroelectric Plant	1908	Hydroelectric Plant	UTIL:ELEC:generation (34.0)

5. LOCATION: STREET & NUMBER	CITY OR TOWN	COUNTY	STATE	6. USGS 7 1/2 QUAD & UTM GRID REF.
On Menominee River	Holmes	Menominee	MI	Stephenson (15')

7. OWNER OF PROPERTY	ADDRESS	
Wisconsin Public Service Corp., Appleton, WI		16.449020.5022035

8. CONDITION: EXCELLENT x GOOD FAIR DETERIORATED RUINS UNEXPOSED ALTERED ACCESSIBLE TO PUBLIC

9. DESCRIPTION & BACKGROUND HISTORY: NUMBER OF STRUCTURES; DIMENSIONS; FABRIC; STRUCTURE & FORM; SURVIVING MACHINERY, FITTINGS AND EQUIPMENT; APPROX. AREA OF SITE; ALTERATIONS; PRESENT-USE; ENGINEER, ARCHITECT, DESIGNER; IMPORTANT EVENTS & INDIVIDUALS

In 1903, two similar companies providing electric service and streetcars in the twin cities of Marinette, Wisconsin and Menominee, Michigan merged to form the Menominee and Marinette Light and Traction Company, with a capital of $560,000, later enlarged to $1 million in 1909. This hydroelectric plant at the Grand Rapids was designed by Jacobson and De Guere, Architects, while T. R. Hasley served as the Superintendent of Construction. The rectangular powerhouse, 25 feet wide and 120 feet long, is a concrete and steel building with brick walls. The dam created by the powerhouse, plus a larger dam located about one quarter of a mile upstream, create a head of 29 feet. The upstream dam, of concrete construction, is about 300 feet long, with a 100 foot spillway portion and 15 steel radial gates, each 12 feet wide. The equipment in the powerhouse includes two 100 KW D.C. generators and five larger generators ranging in capacity from 1100 KW to 1800 KW, with a combined capacity of 6,900 KW, manufactured by Westinghouse, General Electric, and Allis-Chalmers.

10. PHOTOGRAPHS & SKETCH MAP ON REVERSE SIDE

11. RELATED SOURCES OF INFORMATION: HISTORICAL REFERENCES (PUBLISHED ARTICLES, MANUSCRIPTS, REPORTS, DRAWINGS, PHOTOGRAPHIC RECORDS); CONTACTS: (NAMES & ADDRESSES OF ANYONE WITH EYE-WITNESS ACCOUNTS OR RELEVANT INFORMATION); TAPE RECORDINGS

Nameplates on buildings and machinery; Alvah Sawyer, A History of the Northern Peninsula of Michigan (Chicago: Lewis, 1911), I, p. 589.

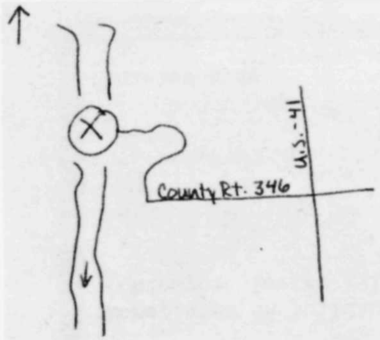
12. DANGER OF DEMOLITION OR DAMAGE: YES x NO
NATURE OF THREAT:

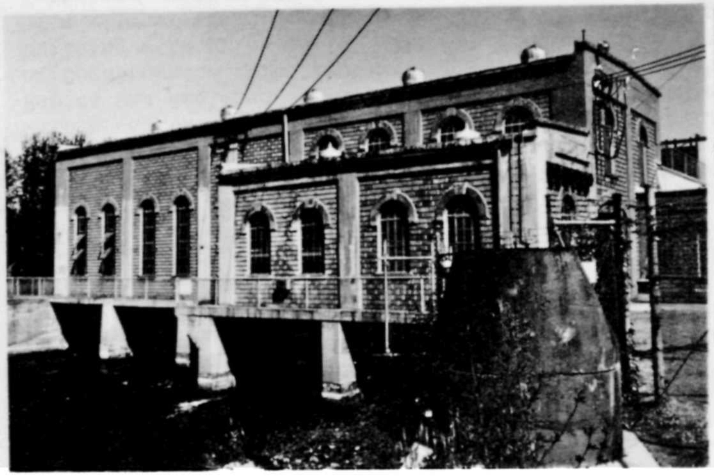
13. PRIORITY: 2

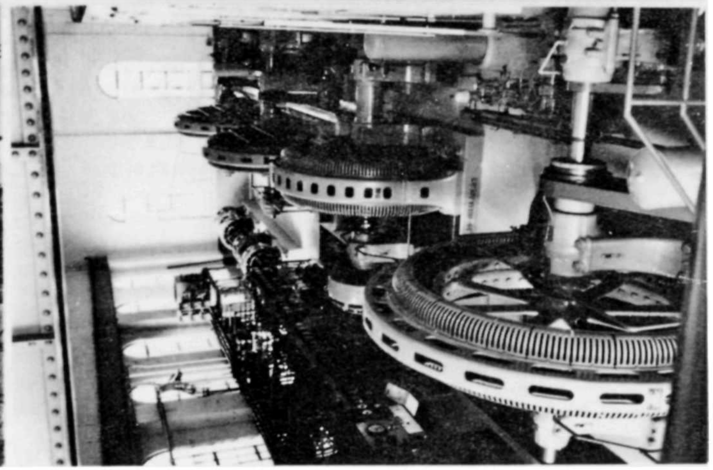
14. EXISTING SURVEYS AND DATES: NHL NR HAER HABS STATE COUNTY LOCAL OTHER

15. INVENTORIED BY: YOUR NAME	ADDRESS	AFFILIATION	DATE
Charles Hyde		HAER Michigan Inventory	6/26/77

PLEASE RETURN TO THE HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE, WASHINGTON, DC 20240


County Rt. 346
U.S.-41





INDEX OF COUNTIES

INDEX OF CITIES AND TOWNS

INDEX OF SITES

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.

Heritage Conservation and Recreation
Service Publication Number 2